

A HISTORY OF K-12 INSTRUCTIONAL TELEVISION

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL OF THE
UNIVERSITY OF FLORIDA
IN PARTIAL FULLFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA
1987

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ACKNOWLEDGEMENTS

I would like to thank Dr. Arthur O. White for his patience and assistance in the preparation of this dissertation and for his guidance throughout my doctoral program, Dr. Richard R. Renner for introducing me to the Foundations of Education program and for his guidance during this dissertation and throughout my doctoral studies, Dr. Kenneth A. Christiansen for his expert guidance in the field of instructional television and for his support throughout my graduate education, and Dr. Mike Nunnery for his editorial assistance.

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Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of
the Requirements for the Degree of Doctor of Philosophy

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August 1987

Chairman: Arthur O. White

Major Department: Foundations of Education

This dissertation is a study of instructional television from the laboratory experiments of the 1930s through to operations in the 1980s. Involvements at the federal, state, and local levels are analyzed. Legislation affecting instructional television is documented from the time of frequency allocations for education, through the school crises, national defense, and civil rights issues which thrust instructional television to the forefront in national movements to reform the curricula in the schools, to legal processes which acted to take the frequencies away from education and remove instructional television from the national agenda. Foundations, agencies, and organizations are analyzed for their influence on the development of instructional television systems, hardware, and software.

Case studies are used to illustrate instructional television systems in operation and to document hardware and software applications in the field. These cases are presented at selected intervals throughout the dissertation, based upon time periods of social, political, or technological advancements which significantly affected the development of instructional television services. They are designed to be representative of projects at the forefront of national trends. Software is analyzed as evolving in two phases: (1) the early days of instructional television, and (2) the years from 1969 to the present. Programs in use during the 1980s are examined in depth. Satellite, cable television, and laser videodisc applications of instructional television are documented. The dissertation concludes with a model electronic curriculum developed by the author.

CHAPTER I INTRODUCTION

In 1952 educators in a rare display of unity combined forces to obtain a portion of the radio spectrum for instructional broadcasts to the nation's public schools. The effort enabled instructional television (ITV) to go from a decade as an experimental medium to an instructional presence in the nation's classrooms. For a time this instructional presence intensified but eventually bungled efforts at ITV implementation caused this medium to fall far below its projected instructional value.

ITV (which is the use of television as a means of instruction or at least an aid in instruction in the classroom) has been hampered by inadequate planning, inappropriate goals, and misapplied technology. The result was that ITV received a poor reception which has helped to undermine initial efforts to make it a significant part of the school program.

During the period between 1952 and 1958 the federal government spent \$37 million and the Ford Foundation spent \$23 million on ITV research-related activities (Tanner, 1958). This constituted the most effort the nation had ever undertaken on behalf of an educational

technology. According to Wittich (1965) "never before had such an avalanche of research, money, and effort swept across the placid face of public education" (p. 7). Many believed ITV to be a most effective teaching tool (Kumata, 1956; Carpenter & Greenhill, 1958; Reid & MacLennan, 1967).

When the Ford Foundation withdrew financial support most schools did not take over financing ITV despite a very low per pupil cost if all schools had sustained the medium (Woodring, 1970). Carter and Walker (1969) reported this cost for the 1966-1967 school year at \$1 per pupil per year for ground-based ITV and \$2.50 per pupil per year for airborne ITV.

The dashed hopes of ITV proponents are perhaps indicated in the words of one of ITV's champions, Wilbur Schramm (1960) who stated that "millions hoped the wedding of television with the cultural resources of the nation would bring about an educational renaissance" (p. 9). The reasons this has not yet occurred is the topic of this dissertation.

Synopsis

This study is designed for those interested in ITV, especially as this medium applies to elementary and secondary schools. ITV's development, distribution, and potential in the instruction process will be reviewed.

The study is begun with an overview of ITV's early years as stemming from the need for a less costly way to deliver instructional services. In the review of the literature ITV is documented from its early struggles during the period 1952-1967 when the nation initially tried to bring it into the classroom, through the period of significant implementation support, abandonment, and possible revival in the present era.

The early education, government, and foundation activities which established ITV are analyzed in Chapter II. In Chapter III representative examples of ITV projects which have received various levels of implementation are presented. In Chapter IV the analysis of ITV's legal framework continues with a detailed look at the legislation from 1958 to 1967. This legislation built the ITV industry and initiated its era of rapid growth.

Soon after legislation established ITV, private organizations formed to ensure its implementation. These organizations and their role in ITV production and distribution are examined in Chapter V. The success of early ITV projects led to the emergence of district, regional, and state ITV networks which often worked in conjunction with public and private agencies. In Chapter VI representative activities of these networks are analyzed.

In 1967 federal funding shifted from stations carrying ITV to stations carrying educational television (ETV) meaning informative, cultural programming, and eventually to stations carrying public television (PTV) meaning cultural, entertaining programming. This shift and its accompanying legislation is documented in Chapter VII.

In Chapter VIII legislation which affected ITV in the period after 1967 is analyzed, both for its educational significance and for its use of ITV as an application of new telecommunications technology. In Chapter IX ITV programming from 1969 to the present is analyzed for its style, emphasis, goal, and financial backing. In Chapter X ITV distribution and production technologies from 1972 to the present are examined through examples which illustrate the new technologies. In Chapter XI recent events which affect a revival of interest in ITV are analyzed.

Need for the Study

Instructional television arose in response to an exploding pupil population and mounting school costs (Mulford, 1960). It then became caught in the frenzy which usually accompanies the introduction of a new type of technology into the classroom. All of this occurred at a time when American education was in the midst of an

acute teacher shortage (Smith, 1961). Although conditions are different today--according to McGrath (1983)--there is still a shortage of math and science teachers and school budgets are also low. In addition, the birth rate began to rise again in 1980 and is continuing to rise at an average rate of over 15% a year (Velocci, 1983). Thus, the United States is experiencing recurring needs, not as severe as in the 1950s, but analogous. It is important to understand why ITV failed to better understand those issues which might arise should ITV again be considered as a tool capable of advancing the interests of education.

Throughout the author's travels to various ITV establishments across the United States interviewees voiced a common call--for a comprehensive industry overview. According to Dr. Roy Morgan (personal communication, 1984), Director of User Services at the Agency for Instructional Television, one needs to reference four or five different books to begin to understand ITV. Most broadcasting textbooks, in referencing ITV, merely reiterate research findings from the 1950-1967 experimental period, with little, if any, notice that ITV is far different today. The study undertaken herein seems to be unique in that an attempt has been made to summarize the entire ITV movement and to provide students of ITV with documentation on the current

trends in ITV financing, production, and distribution. In sum, the present work focuses broadly on concepts, trends, and past institutional involvement with ITV, and more narrowly on forces operating today.

Methodology

Technical, social, and political variables will be examined for their impact on the growth and decline of ITV. For the period between 1950 and 1986 literature is drawn from Communication Abstracts; Comprehensive Dissertation Index; Current Journals in Education; ERIC Documents File; Dissertation Abstracts International; Essay and General Literature Index; Florida OnLine Computer User System; International Index to Periodicals; New York Times Index; Public Affairs Information Service; Readers Guide to Periodical Literature; Social Sciences and Humanities Index; Social Sciences Index; Education Index; U.S. Government Publications Monthly Catalog; U.S. Congressional Reports; U.S. Statutes at Large; U.S. Code; U.S. Superintendent of Documents Monthly Catalog; and the University of Florida, University of California at Los Angeles, University of Southern California, and San Jose State University main libraries.

In addition, material is taken from interviews with individuals who have been or are active in ITV. Also,

resources have been consulted at the following institutions: Southern Educational Communications Association (Columbia, South Carolina); Agency for Instructional Television (Bloomington, Indiana); Catholic Television Network (San Francisco, California and Chicago); Pacific Mountain Network (Denver, Colorado); Nebraska Videodisc Design/Production Group (Lincoln, Nebraska); Central Education Network (Chicago, Illinois); Maryland Instructional Television/Maryland State Department of Education (Owings Mills, Maryland); Great Plains National Instructional Television Library (Lincoln, Nebraska); Association for Educational Communications and Technology (Washington, D.C.); National Education Association (Washington, D.C.); Hagerstown School Board (Hagerstown, Maryland); Corporation for Public Broadcasting and the Public Broadcasting Service (Washington, D.C.); and the National Institute for Education (Washington, D.C.).

Review of Literature

In this review of literature dominant research findings from instructional television's experimental, introductory period (1950-1967) are summarized. In the conclusion of the review the reader is brought up to date with ITV utilization statistics to the present. Survey

results and conclusions are those of researchers active in instructional television start-up operations.

ITV Effectiveness Studies

As stated above, ITV made its debut during a vast teacher shortage (Smith, 1961). This shortage inevitably led research-sponsoring institutions to fund those projects which tested the new teaching tool in the absence of a classroom teacher. This proved to be ITV's undoing as teachers perceived the television as a threat and became hostile toward the medium (Gerlach & Ely, 1971). Had the funding agencies and researchers wished to assure the long term acceptance of ITV initial tests might have focused on procedures for the proper incorporation of television instruction into the curriculum rather than on the use of the medium as a teacher replacement. To be fair, there is certainly a great body of research on methods for the proper incorporation of ITV into the curriculum; however, in the early days of ITV such research was greatly overshadowed by teacher replacement studies.

May and Lumsdaine (1958), Hoban (1960), Kumata (1960), Schramm (1962), Amirian (1963), May (1966), Greenhill (1967), Reid and MacLennan (1967), Chu and Schramm (1968), Bogatz and Ball (1970, 1971), and the Surgeon General's Scientific Advisory Committee on

Television and Behavior (1972) reported that children can learn from both regular and instructional television programming. Anderson (1956), Carpenter and Greenhill (1958), Champa (1958), Painter (1961), Rumford (1961), Alexander (1962), and Amirian (1963) found no significant difference in the test scores of students receiving their lessons from the television as compared to those receiving teacher-directed lessons.

Wilbur Schramm (1962), Director of the Institute for Communication Research at Stanford University, in studying the effectiveness of television instruction, commented as follows:

There can be no doubt that students learn efficiently from instructional television. The fact has been demonstrated now in hundreds of schools, by thousands of students, in every part of the United States and in several other countries. The conclusion of testers, school administrators, teachers, and students alike has been that the average student is likely to learn about as much from television class as from ordinary classroom methods. (p. 52)

Of Schramm's 393 scientifically designed comparisons of televised and classroom teaching, 86% of the cases showed as much or more learning by television than in conventional classes, and 14% showed significantly less (p. 53).

The Ford Foundation's Fund for the Advancement of Education (1959) produced statistics that were not quite so favorable. The Fund was developed in 1957 and

evaluated the use of television in public schools of the United States. Out of 110 different kinds of comparisons, including both elementary and secondary schools, involving a combined total of 14,325 television students and 12,666 control students of equal ability, 68 comparisons favored the television students and 42 favored the control students. However, in only 36 of these cases was the difference statistically significant; in 29 of these the children learned more from the TV classes, and in 9 cases the students receiving traditional instruction fared better (pp. 23-24).

Missing from most effectiveness studies is reference to the fact that the physical presence of the television will influence testing results. The Ford Foundation (1959) summarized this crucial factor by pointing out that in all the research done in ITV, the answer was to be expected:

It was logical to assume that teaching, under normal conditions, which utilized such a powerful resource as might be provided by television, could be as effective, or more effective, than teaching without such a resource. (p. 5)

ITV Implementation Studies

ITV pilot projects and research of the 1950s and 1960s treated ITV as the master teacher with the classroom teacher as a subordinate. However, by the 1970s ITV researchers and administrators realized that

the average classroom teacher does not have the ability to incorporate ITV into the curriculum, or even to understand the abundance of research available on the subject, much less the expertise to put together a comprehensive ITV package. Wittich (1973) commented that ITV was beyond the energies or capacities of any single teacher in planning, production, or other professional work necessary for a good ITV program.

Thus, by the 1970s researchers and ITV promoters had shifted their focus to the use of ITV as a supplement to the educational process. Perrin (1976) stated that learning was significantly better than traditional teaching when television was a component integrated with other instructional strategies into the total learning process.

Salomon (1976) pointed out that television alone "can visually show a transformation which is analogous, or even similar, to what ought to take place in our minds" (p. 27). Mukerji (1976) noted that "special effects made possible by television technology offer new and unique visual stimuli which may expand viewers' perceptions" (p. 318). Friedlander (1974) stated that no other medium can "manipulate action, object, and speech in virtually any imaginable visual and auditory combination" (p. 7). Perhaps the best summaries are offered by Smith (1974) who concluded that television is

highly successful in the motivation of both regular students and slow learners and by Moore (1970) who stated that ITV

1. awakens and creates interest
2. makes learning more meaningful
3. enriches students' experiences
4. widens the scope of learning
5. sharpens the senses of learning
6. makes learning more enjoyable
7. reinforces learning
8. provides otherwise unobtainable experiences. (p. 117)

In sum, ITV researchers generally categorized ITV implementation techniques as having either the ITV as the master teacher with the classroom teacher as a supplement, such as was found in the early days of ITV, or as having the classroom teacher dominant and ITV as a supplement, such as is found in the post-1970 period. Researchers also identified two major ITV software programming styles: (1) the television as an extended teacher, relaying lectures to distant audiences; or (2) the broadcast quality production in which programs are extensively planned and designed.

In the extended classroom ITV production technique the camera is merely placed in a conventional classroom and the teacher lectures to the camera as if it were another student. In the broadcast quality production each lesson is designed by a team of subject matter specialists and the production is supervised by

television personnel skilled in the aesthetics of the broadcast medium.

Typically the classroom teacher is excluded from the production process in the broadcast quality production. Programs are generally designed to serve as self-contained teaching units with manuals and guides for the classroom teacher. This technique produces costly, high-quality programming which is often able to bring into the classroom demonstrations and close-up views unattainable or unavailable to the typical classroom teacher. Dunham, Lowdermilk, and Broderick (1956) described the ideal state of ITV teaching as the use of broadcast quality production programming in an environment in which ITV is an assistant to the classroom teacher, providing illustrative and demonstrative techniques which the typical teacher, lacking specialized skills and materials, could not so readily produce. A good example of this would be a laboratory experiment. The television would also afford all students a good view.

ITV Attitude Studies

Further insight into instructional television's advantages and disadvantages is gained from an analysis of the attitudes and opinions of those who were involved in incorporating ITV into the curriculum.

School administrators. Campion (cited in Asheim, 1962), of the National Education Association, stated that one of television's greatest contributions is its distribution factor: It can be used in schools and areas where facilities and skills are not available. Brish (1964) elaborated on this by stating that ITV can bring greater equality of opportunity by allowing pupils in small rural schools the same variety of courses as given children in larger schools. Pollack (cited in Asheim, 1962) pointed out that television makes it possible to have a good teacher in every subject in every school. Worthington (cited in Asheim, 1962) and Brish (1964) further noted that ITV gives the classroom teacher more time to provide special help for those in need.

However, while the administrative possibilities of ITV are encouraging, Brownell (1962), superintendent of the Detroit public schools, pointed out the major administrative limitation of the medium:

If we could afford to allow everyone of our teachers to prepare for one twenty minute lesson a day, and if they had the help of producers and supervisors, we could improve the quality of teaching tremendously. But we can't afford it. It would take twelve times as many teachers as we have, and we now have enough difficulty getting teachers to handle all of our classrooms. (p. 6)

However, he further stated that ITV could ultimately result in substantial savings:

If we have all fifth-grade teachers in science prepare the same lesson, it means they are all duplicating the efforts of each other in preparing for that class. If a part of that duplicated time can be saved, then they can use that time for preparation and follow-up. So, actually, they would be increasing the amount of time that goes into the preparation of fifth grade science. (p. 7)

This theme is echoed throughout the ITV financing literature--once the equipment is in place the savings would be substantial. The problem is how to garner the funds necessary to purchase the equipment. Stoddard (1957) summed up the matter of cost by stressing that it is not so much that the total cost is so great (if spread among enough schools) but that the "cost item is new and must meet the opposition that any new addition to the budget generally meets" (p. 31).

A portion of the original budget problem was alleviated by parents as PTA groups began to finance television sets for the classroom. Parents were also influential in encouraging administrators to get involved with ITV. Hunt (1956) commented on the use of the television as a public relations tool:

Administrators of school systems which have nurtured in-school educational television programs have been surprised and pleased at the incalculable value such programs have in cementing good relations with parents and the community. Many programs have answered unvoiced questions by parents about what goes on inside their children's classroom [referring to broadcast programs which parents can view at home]. (p. 294)

For a certain period of time (1955-1965) funds were available for ITV in schools. Even so, ITV was often not utilized. Breitenfield (1965) commented on this point:

Educational agencies across the country have only to want television in order to get it. In addition, research abounds in ITV, and there is no question that educational ends can be reached with electronic means. Often, however, it is not lack of desire that inhibits the growth of educational television so much as lack of knowledge. The problems of equipment, curriculum alterations, unknown expenses, program sources, and revised teaching methods are all involved when a school contemplates the use of television. In many cases, educators need professional advice in television, and though there are several organizations dedicated specifically to assisting, some plans still hang endlessly in conference rooms. (p. 34)

Reflecting upon the divergent factors affecting administrators' attitudes toward ITV Asheim (1962) noted an interesting side effect of the ITV movement--that television caused a re-evaluation of education's aims and commitments. Fritz (cited in Asheim, 1962) reported that ITV triggered more cooperation than has any other educational device. Harley (cited in Asheim, 1962) noted that ITV had a particular power to stimulate and motivate in the direction of improvement in education that marked it as unique among the many innovations that have been introduced into the educational scene.

Teachers. Instructional television is a medium in which externally produced software predominates.

Teachers' reactions to ITV must be viewed in relation to

their overall inability to directly control the program's flow of information and presentation technique--television goes at a fixed rate while children learn at different rates.

Until the advent of the videocassette recorder teachers were even unable to control the timing of the telecasts. This caused scheduling problems. Teachers were forced to adjust their schedules around those of the instructional broadcasters. Scanlon (1961) stated that "there was difficulty timing telecasts to fit the schedules of as many schools as possible . . . and how to fit a 30-minute telecast into class periods of varying length" (p. 60). Perrin (1976) contended that teachers objected to synchronizing their schedules with ITV and often disagreed with the content of the programs and with the methodology of the teaching.

Time was also a problem on a more personal note. Already overworked teachers simply did not have the hours to devote to ITV lesson preparation.

Teachers are constantly encouraged to implement all the new techniques found to be effective in upgrading the educational program, but the pressing and varied routine and clerical demands on their time make such action either difficult or impossible to realize. (Lewis, 1961, p. 14)

Finally, as noted earlier, a major concern of teachers in ITV implementation was job security. Chu and Schramm (1975) found that teachers' attitudes toward ITV

were heavily influenced by their perception of the television medium as a self-contained instructional device--as a replacement for the teacher.

Students. Overall, elementary students like ITV better than secondary students (Gerlach & Ely, 1971). However, very few studies were actually devoted to the attitudes of the students. Asheim (1962) reported that student reaction to ITV was thought to be unknown by many educators.

Witty (cited in Asheim, 1962) noted that no educational television program ever placed among the top 10 favorites of children, teachers, or parents. In Washington, D.C., the schools found an initial interest in ITV programming was followed by a general decline in interest (Asheim, 1962).

Questions about the nature of the education process are also raised when considering the effect of ITV on the students. Witty (cited in Asheim, 1962) was concerned that the master teacher may not project the interpersonal aspects of teaching which students have come to expect.

The student wants to be known by his teacher, and he wants to know that he is known; this kind of personal relationship, built up through time, is as important as a brilliantly conceived and planned lecture crammed with facts. Information acquisition is not enough in education, and there is a danger that educational television lends itself to being nothing more than this. (p. 18)

Another major issue in students' acceptance of ITV is production quality. Perrin (1976) believed that "students object to crude programs produced with shoe-string budgets. Their experience with commercial television establishes their expectancy for interest level and production quality" (p. 7). This problem is even more pronounced in the 1980s. The children of today are accustomed to fast-paced television programming, typically of low intellectual quality and designed for the passive viewer, while ITV is slower paced and requires viewer interaction. ITV can also never hope to match the multi-million dollar budgets of commercial television.

Still, it is possible for ITV producers to learn from commercial production techniques. The Childrens Television Workshop ("Sesame Street") adopted such methods and found that learning is increased when the programming encourages motor and verbal responses (Mielke, 1975; Head & Sterling, 1982). An analysis of ITV programming inspired by commercial production techniques is undertaken in Chapter IX.

ITV Utilization Statistics

Presumably because of the cost involved, there have been only random studies conducted on the use of ITV and on the resources expended in its acquisition. The data are often grouped together with other media, such as

textbooks, thereby compounding the problems of an insufficient data base. The following facts and figures are from these government-funded studies.

On the average in 1974 a school spent \$2,192 on instructional television. Software purchases came to about \$427 million total, and the total for all audiovisual software, hardware, and operations came to \$1.26 billion, for an average per student cost of \$27.90 a year, or 2% of total educational expenditures (Summary of Research, 1979). The average per student expenditure for ITV totaled approximately \$3.25, based on an aggregate expenditure estimated as between \$73 and \$100 million (Dirr & Pedone, 1978).

Two studies on ITV availability and classroom usage have been conducted by the Corporation for Public Broadcasting. The first was for the 1976-77 school year, and the most recent for the 1982-83 school year. The National Center for Educational Statistics of the U.S. Department of Education compiled the data. The sampling of elementary and secondary schools resulted in data from 11,500 public school districts and Catholic dioceses, 81,000 school buildings, and 2,137,000 classroom teachers. The information for the following paragraphs was drawn (unless otherwise specified) from the executive summary of these data, titled Availability, Use, and Support for Instructional Media, by John A. Riccobono (1983).

Approximately 71% of all teachers (K-12) have ITV available. The national average for television sets per building hovers at about 6, and 75% of the schools have videotape recorders. The most common source of ITV programming is the direct off-air broadcast from a public television station, followed closely by videotape, and then by commercial broadcast. Less than half of all teachers have access to a videotape library. Roughly 80% of the nation's public television stations are active in ITV--committing over one-third of their broadcast time to provide school programming (National Narrowcast, 1983)--this figure includes ETV ("Sesame Street") as well as ITV (Dirr & Pedone, 1978).

Only 37% of all teachers use television, and only 30% on a regular basis--defined as 60 minutes per week (Dirr & Pedone, 1978). The teachers seem to prefer that a series be shown throughout the entire school year as opposed to a subject area concentrated into a few days or weeks. ITV is usually found as part of a learning presentation. The most popular series are those which deal with science, social science, and language arts.

The majority of the school's media budgets (45%) went for computers in the 1982-83 school year. Television received only 15%, mostly for district-wide budgets. A 1977 survey indicated that 58.4% of software sales (ITV)

are to grades K-8, 27.2% to grades 9-12, with the rest to post-secondary (Summary of Research, 1979).

Future plans for television expenditures have focused on the expansion of the videotape library and the purchase of additional videocassette recorders. Purchase decisions are difficult in public schools because of the absence of a single decision maker--decisions are often divided among teachers, supervisors, and librarians. Teacher training in ITV comes primarily from the school district, followed by the state department of education, the public television station, and personnel within the school.

Elementary schools still use more ITV than junior or senior high schools. Elementary school usage is declining while grade 7-12 usage is increasing. At all levels preparation and follow-up time are increasing as the teachers better learn to integrate the programs into their curricula. Generally, teachers who do use ITV are using it more often and spending more time with it.

The National Center for Educational Statistics' Public Television Programming by Category for 1974, 1976, and 1978--a study commissioned by the Corporation for Public Broadcasting--reported little change in the type of programs used per grade level. From A Listing of Educational Series Broadcast by Public Television Licensees for the 1978-79 school year, the most popular

and effective broadcasts were in social studies and science, followed closely by reading and writing, literature, and health. In kindergarten and first grade, as reported in the Corporation for Public Broadcasting's Public Television Programming by Category for 1976 and 1978, the overwhelming favorites were basic education, health, and music/art. Teachers in grades 2 through 4 mainly used reading and writing programs. A shift occurred between 1976 and 1978 for grades 5 through 9--in 1976 the emphasis was on mathematics. For grades 10 through 12 the emphasis continued to be on social science, history, and literature programs.

Summary

Instructional television became part of the national agenda during the student population boom and resulting teacher shortages of the 1950s. The hope was that ITV would bring superb lectures and complicated laboratory experiments to the nation's students and expand the schools' instructional capacities to reach children in distant locations. Subsequent events brought further attention to the possibilities of instructional television for raising achievement levels in science and mathematics. Instructional television was thrust to the forefront in national efforts to improve curriculums in the nation's schools.

CHAPTER II

EARLY ITV: INSTITUTIONS AND LEGISLATION

The roots of instructional television extend back to the Communications Act of 1934. This act established as a responsibility of the Federal Communications Commission (FCC) equitable radio broadcast spectrum utilization in the public interest, convenience, and necessity (Sixth report and order, 1952). Public interest came to mean many things in the ensuing years and one of the interpretations involved a public desire for non-commercial programming of an instructional or educational nature.

Initial Experiments

In 1932 W9XK, an experimental television station of the electrical engineering department at the State University of Iowa, began ITV operations. By 1939 the station had transmitted more than 400 programs including lecture courses in art, shorthand, engineering, and botany (Hull, 1962). Though the 1940's proved to be a time of rapid growth for television, education did not pursue the potentials implicit in the Iowa experiments. By 1948 there were only four additional U.S. educational institutions involved with television: Iowa State

College, Kansas State College, The University of Michigan, and American University in Washington, D.C. (Hull, 1962).

Television "Freeze" Order

On September 30, 1948, the Federal Communications Commission issued a freeze order which provided that no new or pending applications for the construction of new television broadcast stations would be acted upon (Sixth report and order, 1952). The freeze was to allow the FCC time to assess the rapidly growing confusion over the allocation of broadcast frequencies--station interference was threatening the viability of the medium--and came at the request of the broadcasters (Steinberg, 1954). At this time the FCC also released its long-awaited plan for a new nation-wide frequency allocation system--with no provisions for educational needs.

The only dissenting opinion on the Commission's proposed allocations plan was voiced by Commissioner Freda Hennock who in a history-making plea insisted that the FCC reserve some of the frequencies for education. The Commission, having heard testimony in support of its new allocation plan, then established a late summer deadline for the filing of protest petitions--at which time the National Association of Educational Broadcasters made its move (Hull, 1962).

Education Mobilizes for the American Public

During the freeze, education organized to demand exclusive frequencies for instructional broadcasting. The efforts were spearheaded by a group of ITV station managers of state universities in the Midwest that comprised the leadership of the National Association of Educational Broadcasters (NAEB). They convened in caucus at the 1948 meeting of the Institute for Education by Radio--a forum sponsored by Ohio State University where plans for televised education were discussed. The caucus clarified its intention to seek television channel reservations for education.

By late 1949 efforts to reserve these channels were finally achieving substantial momentum. The United States Office of Education had filed its own petition with the FCC asking that VHF as well as UHF channels be reserved and the National Education Association joined in this plea.

The National Education Association's rationale for supporting television stations for education was derived from the government's duty to provide for the public welfare. Television was already recognized as an influential force on children, and the NEA believed it would be acting in the public interest to use the medium to improve the educational offerings of the schools.

However, they were also aware of the hazards posed by improper use of the medium. This 1958 statement summarized the general concern of the NEA from the time of its early organizational involvements.

The National Education Association position is aware of possible dangers inherent in educational television, especially because some shortsighted advocates of educational television view it as an economy measure, as a short cut to the educational process, and as a possible means to put education on a mass production basis. [However, being] fully aware that television is no substitute for the personal contacts of teachers and students, the NEA encourages extensive experimentation and research concerning the educational use of television. It urges vigorous action to explore the potential of closed-circuit television in the classroom, especially with reference to those developments which may make possible individualization of instruction and improvement in teaching. (McCaskill, 1958, p. 21)

Also in 1949, at the Allerton House of the University of Illinois continuing education center, Dr. Wilbur Schramm, dean of the university communications division, concluded that educational broadcasting had reached a critical stage in its development. He enlisted in aid of the plea for educational broadcasting channels the Rockefeller Foundation and Dr. George Stoddard, the university's president--subsequent chairman of the National Educational Television and Radio Center. At Allerton House 30 educational broadcasters from Canada, Great Britain, and the United States assembled to plan the future of educational television (Hull, 1962). Some

of those active included Richard Hull, president of the National Association for Educational Broadcasters (NAEB); Franklin Dunham, U.S. Office of Education; R.R. Lowdermilk, U.S. Office of Education; Belmont Farley, National Education Association; Edgar Fuller, National Council of Chief State School Officers; Michael Jablons, Federal Communications Commission; James McPherson, National Education Association; Bernard Watson, U.S. Office of Education; George Probst, University of Chicago; I. Keith Tyler, Ohio State University; Parker Wheatly, Lowell Institute Broadcasting Council; Paul Lazarsfield, Columbia University; Charles Siepman, New York University; and Howard McClusky, University of Michigan (Schmid, 1971). The agencies represented included the Association of Land Grant Colleges and Universities, the Association of School Administrators, the American Council on Education, the Council of Chief State School Officers, the National Association of Educational Broadcasters, the National Association of State Universities, the National Congress of Parents and Teachers, and the National Education Association.

In October, 1950, the agencies formed an ad hoc committee to represent their interests before the FCC. This committee was called the Joint Council on Educational Television (JCET) and was subsequently formalized under the auspices of the American Council on

Education to become one of the most influential forces promoting educational broadcasting. One of the committee's main goals was to assist educational institutions in establishing stations. The first chairman of the JCET was Dr. Edgar Fuller, then executive secretary of the National Council of Chief State School Officers (Houk, 1963).

Also in 1950 came the speech of Dr. Earl J. McGrath, U.S. Commissioner of Education, before the FCC hearings on educational television. McGrath called for at least one channel in every broadcasting area to be reserved for educational purposes. He suggested as vital to the continuous improvement of public education that every school system and college competent to produce educational television programs and financially able to construct a station be assured of a suitable locally usable transmitting frequency (Wood & Wylie, 1977). This speech marked the beginning of public awareness of the importance and potential of educational television.

During 1951 and early 1952 a rapid succession of events acted to promote ITV. Educational agencies and organizations received a sudden influx of much-needed financial backing. The major source of this funding was the Ford Foundation.

Ford Foundation

The Ford Foundation was established as a private, non-profit corporation and funding agency to advance the public welfare in 1936 by Henry and Edsel Ford.

The Ford Foundation's general purpose is to advance human welfare. More specifically, it serves the public welfare by trying to identify problems of importance to the nation and the world and by supplying funds on a limited scale for efforts directed at their solution. Its activities are mostly in the United States and mostly related to education. (Ford Foundation, 1957, p. 7)

In April, 1951, the Fund for the Advancement of Education was created by the Ford Foundation. It was assigned the task of investigating and giving initial support to those ideas, experiments, and demonstrations that seemed to offer at least partial solution to problems plaguing American schools and colleges. The Fund confined itself to short-term pilot efforts, using its relatively limited resources as risk capital (Fund, 1961). Of the initial \$76.5 million given by the Ford Foundation to educational television, \$5.6 million was granted through the Fund for the Advancement of Education, and \$11.2 million was granted through the Fund for Adult Education (Houk, 1963). The utilization program of the Fund (1961) is described below:

The underlying aim of these so-called "utilization programs" has not been to replace teachers, but to multiply their effectiveness by new techniques and devices. Television, for instance, has been given thorough demonstration not as an embellishment or teacher substitute,

but simply as an effective medium of communication, capable of bringing the best teachers into direct contact with greatly increasing numbers of students. (p. 19)

Generally, the Fund supported early experimental stages of programs, and the Foundation expanded them with large-scale demonstration grants once their effectiveness had been established (Ford Foundation, 1961).

Perhaps Houk (1963) best summarizes Ford Foundation involvements with ITV:

The officials of the Ford Foundation viewed American education at mid-century as being in a state of crisis caused by increases in the number of pupils and in the amount and complexity of material to be learned, and by attendant shortages in the supply of qualified teachers and of school buildings. Television was considered by the Foundation to be a means of allaying this crisis. Television was, however, a relatively unexplored medium for education. Television was expensive. Because of its relative independence from public pressure and factual disputes, the Ford Foundation was motivated to enter the field of educational television, and to sponsor hundreds of experiments designed to study its effectiveness as an educational tool. (p. 166)

The Ford Foundation became the financial driving force behind many of the most dramatic implementations of instructional television of the 1951-1967 ITV experimental period. Donald Wood (1965), referring to the FCC Sixth Report and Order and the Ford Foundation's commitment, noted that "the FCC made educational television possible; the Ford Foundation made it a reality" (p. 474).

Sixth Report and Order

On April 14, 1952, the educators' efforts were rewarded. The FCC released its Sixth Report and Order and reserved some frequencies for education. A "Table of Assignments" was established to ensure a fair and equal allocation of the scarce frequencies available. The table was based upon the three considerations of efficient technical use of the limited number of channels, the most protection for those residing in smaller cities and rural areas, and the best means of providing for non-commercial educational television. It also permitted the elimination of certain procedural disadvantages in connection with the processing of ITV applications which would otherwise adversely affect the overall availability of educational television to the people (Sixth report and order, 1952). The report further concluded that

One of the reasons for having the reservation is that the Commission recognizes that it is of the utmost importance to this nation that a reasonable opportunity be afforded educational institutions to use television as a non-commercial educational medium, and that at the same time it will generally take the educational community longer to prepare for the operation of its own television stations than it would for some commercial broadcasters. (Sixth report and order, 1952, p. 162)

The Commission was also careful to point out that the provision for non-commercial educational television stations "does not relieve commercial licensees from their duty to carry programs which fulfill the

educational interests of the community in which they operate" (Sixth report and order, 1952, p. 163).

In sum, the FCC believed that the best method of achieving the potential of educational television resided in the reservation of channels for non-commercial educational stations together with continued adherence by commercial stations to the mandate of serving the educational needs of the community.

While the Commission did not specify who would be eligible to own and operate a non-commercial educational station, precedence indicated that such licenses would go to non-profit educational organizations. Municipalities would be eligible only in the event that no independent educational organization would come forward.

The FCC allocated 12% of the 2,053 television frequencies available to education. Of the 242 slots, 162 were in the UHF range and 80 were VHF channels. Where a community had fewer than three frequency assignments no channel reservation for education was proposed except in those communities which were designated as primarily educational centers. There reservations were made although only one or two channels were assigned.

The Commission also concluded that as a further assignment factor it should provide channels for non-commercial educational television service in 46 communities outside of metropolitan areas designated as "primarily educational centers." Certain of

these communities were assigned one channel for non-commercial educational use, whereas they would otherwise not have been assigned any channel; others received an additional channel over and above the number of channels they would have otherwise received. (Sixth report and order, 1952, p. 169)

For this instance the FCC set up conditions under which educational institutions might use the reserved channels. For example, they required that the facilities of any educational station be available to all institutions of education in the area. Thus, such things as equipment purchases and maintenance became issues to be solved from a myriad of educational sources--public as well as private.

In summary, the Commission offered three alternative types of organizations for the initial year of operations of any educational channel: (1) a state-wide educational authority representing a group of educational institutions to be consolidated into a state network; (2) a single educational agency such as a school board or college ("primarily educational centers" with shared facilities); and (3) a combination of educational, cultural, and civic groups representing the community. Finally, the FCC stipulated that the reservations be utilized within a reasonable amount of time--at which point the Ford Foundation allocated financing.

First Educational Noncommercial Stations

In July, 1952, Kansas State College applied for permission to construct one of these new stations but did not proceed, giving another applicant the distinction of being first on the air. KUHT, jointly licensed to the University of Houston and the Houston Board of Education, became the pioneer educational noncommercial station on May 12, 1953 (Hull, 1962).

Ford Foundation grants went into effect in the early 1950's and resulted in several of the world's largest ITV projects. The American Council on Education and the Joint Council on Educational Broadcasting (formerly JCET), on commission from the Foundation, found 21 cities "ripe" for ITV. In establishing these priorities the council used the following criteria: the presence of local initiative, the prospects for local financing of most construction and of daily operations, the number and kind of local program sources, the strength of commercial opposition, the population density of the market, the possibilities for connection with state or regional networks, and the attitude of local educators and community leaders toward educational television (Powell, 1962). The Ford Foundation decided to provide one-third of the cost of construction in a sizable number of communities, rather than to finance the total cost in a few areas (Houk, 1963).

Summary

Instructional television evolved slowly from its conception in university research laboratories in the 1930's until the television "freeze" order of 1948. During the "freeze" educators organized to request television frequencies. Their demands were derived from Federal Communications Commission requirements that radio frequencies be used in the "public interest." In 1952 the FCC, in issuing the Sixth Report and Order, allocated frequencies for noncommercial, educational television stations. The Ford Foundation provided financial support for many of the early ITV projects.

CHAPTER III
CASE STUDIES: ITV PILOT PROJECTS 1952-1960

The Ford Foundation, community groups, school districts, universities, and municipal agencies all acted to establish educational noncommercial ITV operations in the post-"freeze" era. Generally, either community groups or representatives from the local school districts were in control of daily operations. Stations operated by the public schools used their frequencies primarily for classroom instruction. Educational stations operated by the communities aired classroom instruction as part of cultural and informational programming.

Telecasts

During the early years of ITV limited technology made most ITV systems quite similar in their operations and in the types of software utilized. The programming was generally broadcast although ITV systems connected by cable--referred to as closed circuit television--were also popular. Some of these early ITV systems are described in the following section. Unless otherwise noted, they are still in operation today.

Greater Cincinnati Educational Television

WCET, operated by the Greater Cincinnati Television Educational Foundation, began operations in 1954. It was the fourth ETV station in the United States. WCET began its ITV operations with just one 15-minute in-school program per week, broadcast to 5 schools, with an audience of 250 students. By 1959 WCET was telecasting 25 half-hour in-school programs per week to 375 schools and an audience of 30,000 students from kindergarten through high school (Neely, 1959). By the autumn of 1959 the program schedule included elementary enrichment, French (grades 3-5), art (grades 5-6), science (grade 6), reading (grade 7), home economics (grades 7-12), biology (grade 9), driver education (grade 10), advanced mathematics (grade 12), counseling (all grades), and teacher training (Kumata, 1960).

WCET was assigned a UHF frequency--a considerable disadvantage compared to VHF broadcasts because of tuning difficulties and the need for a special antenna. Still, by 1959, 30,000 homes in the Greater Cincinnati area were able to receive the broadcasts. These broadcasts often reached children unable to attend school (Neely, 1959).

Dade County ETV

On August 12, 1955, the efforts of public-spirited citizens of the Greater Miami area were rewarded when

WTHS-TV began broadcasting as Florida's first ETV station. Three years later, in the midst of a 54% surge in public school enrollments, the Dade County Board of Public Education decided to implement instructional television. Participating in the experiment were 3 elementary schools, 3 junior high schools, and 3 senior high schools totaling 7,000 students. Favorable results increased participation in the second year to 10 elementary schools, 12 junior high schools, and 6 senior high schools totaling 18,500 students. Third year participation grew to 28 schools with 30,000 students. In the 1960-61 school year 50,000 students participated in ITV. The lessons were telecast 5 days a week for 27 minutes per lesson (Hall, 1962).

Television classrooms usually were located in auditoriums or cafeterias and equipped with 1 television per 50 students. Telecourse instruction was provided in American history, Spanish, science, literature, speech, and biology. Teachers worked in teams to monitor the large group telelectures. For instance, while the science teacher was lecturing the history teacher might be counseling students, answering questions, passing out literature, etc. A teachers aide might be assisting with equipment. After the telelectures the students would return to their classrooms for discussion. The television teachers, in addition to being responsible for

teaching one television class and assisting in another, were required to teach one regular class. Thus, the teachers were occupied for only 3 periods of the day leaving them time for the additional planning of the large class telecourses (Hall, 1962).

Washington County CCTV/ETV

Washington County, at Hagerstown, Maryland, in 1956 was the location of the largest single experiment in public school teaching by closed-circuit television. The Ford Foundation's Fund for the Advancement of Education contributed over \$1 million to the project with television stations and telephone companies adding another \$8 million (Houk, 1963).

By 1959, the Washington County Closed-Circuit Educational Television Project had grown to include 37 of the 49 area schools with program distribution to 16,500 out of 18,000 available pupils (Washington County Board of Education, 1959). A distinctive feature of the project was its extensive programming schedule--122 lessons a week by 1961. This schedule was made possible because the closed-circuit system was capable of transmitting 6 programs simultaneously (Houk, 1963). Courses were broadcast covering major subject areas for 12 grades.

In addition, "Mathematics for Mathematicians" dealt with elements of calculus, analytical geometry, and other college-level mathematics. Through the aid of television 65 "superior" students scattered throughout the county viewed these televised lessons (Houk, 1963).

The continuous and comprehensive evaluation process encompassed the reactions of teachers, pupils, parents, and other members of the community. Students were tested for the influence of televised lectures under the conditions of class size, class composition, follow-up procedures, learning, impact of studio and classroom teachers, and the behavior of other students.

One evaluation made during the first year of daily televised mathematics lessons reported that after only 9 months 5th grade pupils had gone from 5 months below the national average in arithmetic to 4 months above (Brish, 1964).

Chelsea CCTV/ETV Project

In 1957 the Ford Foundation funded the Chelsea Project--a closed-circuit installation which connected four 12-story low-income apartment buildings in a three block area in New York City. The project included 607 families (one-third Spanish-speaking of Latin American and Puerto Rican origin), an elementary school of

approximately 1,100 pupils, a community house, and a health center (Creshkoff, 1958).

There were 2 studios and 5 remote origination points. The control room was located in the elementary school. The programs were distributed to 42 classrooms, 1 auditorium, 8 viewing locations in the community house, and 607 receivers in the 4 apartment buildings (Kumata, 1960).

The presentations included 3 types of programs: (1) in-school subjects such as elementary science, music, speech improvement, and health instruction; (2) language teaching, i.e., Spanish and English; and (3) community-oriented programs such as health discussions and PTA meetings (Kumata, 1960).

Programs

Following is a brief sample of the types of programs which aired during the early days of ITV. Working with classroom teachers educational television coordinators at commercial television stations designed ITV productions.

Commercial Television ITV Programming

Owing to the FCC's lack of enforcement of the community service requirement the participation of commercial stations was generally on a voluntary basis.

ITV programs produced by commercial stations had a general format rather than a specialized concern for a particular school curriculum.

In 1938 NBC broadcast instructional programs to a group of 250 students. In the 1940s CBS televised the painting collection of the Metropolitan Museum of Art in New York City. Similarly, New York's WCBW televised the first aid programs of the American Red Cross.

While World War II depleted much of the early ETV/ITV commercial enthusiasm, immediately after the war NBC announced the first permanent educational broadcasting series, "Your World Tomorrow." This series featured instruction in such matters as science and math. Early program titles included "The Mighty Atom," "Jet Propulsion," and "Huff-Duff, the Radio Detective." In cooperation with the New York City Board of Education the network had students view the programs in special rooms for purposes of evaluation. During the early days of ITV commercially broadcast "Continental Classroom" was popular. These early commercial ITV programs generally mixed instructional material with education-oriented entertainment and practical instruction.

The medium even gained some artistic legitimacy when the show business weekly "Variety" reviewed a university telecourse aired on WEWS, Cleveland, and found

the performances of the professors far above those of normal university lecturers (Wood & Wylie, 1977).

Early ETV/ITV Station Programming

From the engineering laboratory ITV broadcast experiments of the early-1930s through the more established programming of the 1960s ITV produced by schools and universities remained essentially in the "talking head" or lecture format of programming. ITV in these instances consisted of placing a camera in front of classroom teachers to relay their normal lectures to distant audiences. Two exceptions that still flourish today are described below:

"The Human Body". The Alabama Educational Television Network produced "The Human Body" in 1959 for grades 3 through 6. As were typical of the era this production used direct instruction. Although the production quality and use of special effects were limited the instructor was able to break the monotony of a "talking head" through the use of graphs. "The Human Body" series conveyed an extensive amount of information.

A typical lesson, titled "The Digestive System," took place entirely in the television studio and started with a vocabulary exercise while students studied a chart of the digestive system. The teacher then discussed the various parts of the digestive tract and illustrated how

various foods are treated. The program ended with a review of the various parts of the digestive system and their function.

"Chemistry Study and Physics Films". Educational Services Incorporated of the Encyclopedia Britannica produced this series in 1959 for grades 10 through 12. Though the production quality was poor, the program conveyed an enormous amount of material.

The pace was boring and slow, the visuals bare, drab, and cluttered. Yet, the program's content conveyed superb lab experiments by researchers in the physical sciences from the Massachusetts Institute of Technology and Bell Telephone Laboratories.

The films had two main purposes: (1) to introduce into the classroom important experimental evidence which is difficult or impractical to introduce through student experiments and live demonstration; and (2) to clarify, through animation, the mental models of structure and of dynamic processes which help make sense out of the experimental evidence. The films conveyed the nature and excitement of scientific research. The audience applied the principles learned to the external world.

Each of the films in the series included demonstrations both before and after their presentations. Some of the experiments included altering light patterns through a prism, comparing light waves to bullets,

analyzing particles in a vacuum, using slinkies to demonstrate wave patterns, and using a Geiger counter to "hear" light.

Summary

ITV broadcast systems operated soon after the FCC established television frequencies for education in 1952. Early ITV generally utilized either an ETV station to broadcast the programs or a cable, closed circuit television system to distribute programs within school buildings or selected sites. Most of the early ITV programs were little more than classroom lectures rebroadcast to students unable to be accommodated by the original lecture. However, outstanding programs were also produced and some of these brought complicated laboratory experiments unavailable to the typical teacher into the classroom. Commercial television experimented with ITV during the early years, producing practical, instructional, and entertainment-oriented educational programming.

CHAPTER IV
BUILDING ITV: LEGISLATION 1958-1967

From the passage of the FCC Sixth Report and Order (1952) establishing educational noncommercial television frequencies, through the remainder of the 1950s, instructional television experienced steady growth. Pilot projects became permanent ITV installations and expanded to distribute programming to neighboring school districts and communities. Regional ITV emerged and state departments of education began to form state ITV networks. Private agencies organized to assist in the ITV program production and distribution process.

Before analyzing these regional, state, and private agency ITV involvements it is necessary to review the legislation which carried ITV from the pilot experiment era of the early- and mid-1950s to the trendy era of the late-1950s to mid-1960s. This legislation was prompted by international events mainly in the scientific field and the Sputnik launch by Russia and resulted in the U.S. Government becoming the major funding source pushing ITV to unanticipated levels of acceptance.

National Defense Education Act

The National Defense Education Act (NDEA) passed as a \$1 billion program for the sciences, mathematics, and foreign languages. Russia's launch of Sputnik indicated that the United States had fallen behind in the scientific field. This was forewarned in the following communique:

The joint Atomic Energy Committee March 28, 1956, released a report stating the energy program was "in serious danger of lagging unless something drastic is done immediately" to expand the education of engineers and scientists. The U.S. was wasting 80% of its potential scientific and engineering manpower through the failure of qualified high school graduates to go on to college and of college students to finish their education.
(Congress and the Nation, 1945-64, p. 1208)

On November 26, 1957, the President's 20-man Committee on Scientists and Engineers urged more scientific training to place the nation's scientists on a par with Russian scientists and technologists (Congress and the Nation, 1945-64).

The NDEA bill moved through Congress with relative ease. In January 27, 1968, President Eisenhower in his special education message requested a \$1.6 billion federal-state education program emphasizing science, mathematics, and foreign language. He signed the NDEA bill September 2, 1968 (National Defense Education Act, 1958), saying it would "do much to strengthen our American system of education so that it can meet the

broad and increasing demands imposed upon it by considerations of basic national security" (Congress and the Nation, 1945-64, p. 1208). A key section of the bill reads

The Congress hereby finds and declares that the security of the Nation requires the fullest development of the mental resources and technical skills of its young men and women. The present emergency demands that additional and more adequate educational opportunities be made available. The defense of this nation depends upon the mastery of modern techniques developed from complex scientific principles, new techniques, and new knowledge. (National Defense Education Act, 1958, p. 1581)

Instructional television was viewed as a tool of immense potential for the delivery of science instruction to students. Under the NDEA schools and colleges received their first federal funding for the purchase of ITV equipment.

Television Reception Equipment

Formally, NDEA Title III provided financial assistance to strengthen science, mathematics, and modern foreign language instruction. In reality, it provided funds to enable schools to purchase equipment necessary to improve instruction in critical subjects. The local schools provided matching funds to obtain federal dollars. With these funds school systems purchased language labs, science demonstration equipment, and television reception equipment. Since some math,

science, and foreign language programs involved telecourse instruction for use in open-circuit school ITV projects school systems purchased televisions (Wood & Wylie, 1977). Another important section of the NDEA reads

There are hereby authorized to be appropriated \$79,000,000 for the fiscal year ending June 30, 1959, and for each of the three succeeding fiscal years, for making payments to State educational agencies under this title for the acquisition of equipment [suitable for use in providing education in science, mathematics, or modern foreign language]. (National Defense Education Act, 1958, p. 1588)

Research and Dissemination

NDEA Title VII provided for research and experimentation in more effective utilization of television, radio, motion pictures, and related media for educational purposes. Part A of Title VII, Section 701, focused on research and experimentation in educational media.

In carrying out the provisions of this part the Commission, in cooperation with the Advisory Committee on New Educational Media, shall (through grants or consignment) conduct, assist, and foster research and experimentation in the procurement and evaluation of projects involving television, radio, motion pictures, and related media of communication which may prove of value to State or local educational agencies in the operation of their public elementary or secondary schools, and to institutions of higher education, including the development of new and more effective techniques and methods--(1) for utilizing and adapting

motion pictures, video tapes, and other audio-visual aids; filmstrips, slides, and other visual aids; recordings and other auditory aids; and radio or television program scripts for such purposes; (2) for training teachers to utilize such media with maximum effectiveness; and (3) for presenting academic subject matter through such media. (United States Senate Committee on Labor and Public Welfare, 1958, p. 38)

Part B of NDEA Title VII concerned the dissemination of training information in the use of media or for ITV program development. The relevant section read

In order to disseminate information concerning new educational media (including the results of research and experimentation conducted under Part A of this title) to state or local educational agencies, for use in their public elementary or secondary schools, and to institutions of higher education, the Commissioner: (1) shall make studies and surveys to determine the need for increased or improved utilization of television, radio, and motion pictures, and related media of communication for educational purposes; (2) shall prepare and publish catalogs, reviews, bibliographies, abstracts, analyses or research experimentation, and such other materials as are generally useful in the encouragement and more effective use of these media for educational purposes; and (3) may upon request, provide advice, counsel, technical assistance, and demonstrations to state or local educational agencies and institutions of higher education undertaking to utilize such media of communication to increase the quality or depth or broaden the scope of their educational programs. (United States Senate Committee on Labor and Public Welfare, 1958, p. 38)

Part C of NDEA Title VII established in the Office of Education an Advisory Committee on New Educational

Media. The Advisory Committee consisted of the Commissioner (chairman), a representative of the National Science Foundation, and 12 people appointed by the Commissioner--drawn from institutions of higher education and identified with the sciences, liberal arts, or modern foreign languages. Three of the 12 academic appointees actually engaged in teaching or in the supervision of teaching in elementary or secondary schools; 3 appointees had experience in the utilization or adaptation of television, radio, motion pictures, and related media of communication for educational purposes; and 3 had lay representative interest in the problems of communication media (National Defense Education Act, 1958).

The Commissioner of Education distributed Title VII funds through grants-in-aid or through contracts with public or non-profit agencies, organizations, and individuals. Grants-in-aid were employed to support proposals initiated, developed, and submitted by groups outside of the United States Office of Education. Contracts were issued for the conduct of research and experimentation originated by the Office of Education, but conducted by individuals and groups outside the Office. Dissemination projects (Part B) were initiated by the staff of the Educational Media Branch of the United States Office of Education, and were conducted either directly by personnel of the Office of Education

or by public or private agencies, organizations, groups, or by qualified professionals contracted by the office (Houk, 1963).

For years, the NDEA spurred school systems to purchase television lessons for their classrooms. Still, the NDEA emphasized hardware over programming engendering the need for a national program to boost educational television production and distribution (Wood & Wylie, 1977).

Educational Television Facilities Act

The Educational Television Facilities Act (ETV Act) was passed on May 1, 1962 (Educational Television Facilities Act, 1962), under the leadership of Senator Warren G. Magnuson, Chairman of the Committee on Commerce. He was influenced by educational broadcasters eager for financial support to modernize equipment, convert to color production and transmission, and expand facilities.

Limits on Government Control

Educational broadcasters did not want federal involvement in programming. The situation of federal agencies deciding which ETV/ITV programming would get support and which would not represented too much of a threat of government control over programming. Thus,

educational broadcasters appealed to Congress mainly for federal dollars to help purchase equipment and facilities (Wood & Wylie, 1977). This effort received strong endorsements from the Federal Communications Commission (Lishman, 1967).

The ETV Facilities Act represented the first federal support of educational broadcasting. Eventually the Act was amended to become Title III of the Communications Act of 1934. This act assisted, through matching grants, in the construction of educational television broadcasting facilities to achieve prompt and effective use of all educational television channels remaining available; equitable geographical distribution of educational television broadcasting facilities; and educational television broadcasting facilities which would serve the greatest number of persons and serve them in as many areas as possible. According to Section 392 of the Act, grants were limited to public institutions of education or nonprofit educational entities.

For each project for the construction of educational television broadcasting facilities there shall be submitted to the Secretary an application for a grant containing such information with respect to such project as the Secretary may by regulation require, including the total cost of such project and the amount of the Federal grant requested for such project, and providing assurance satisfactory to the Secretary--(1) that the applicant is (a) an agency or officer responsible for the supervision of public or secondary education or public higher education within that state,

or within a political subdivision thereof, (b) the State educational television agency, (c) a college or university deriving its support in whole or in part from tax revenues, or, (d) a nonprofit foundation, corporation, or association which is organized primarily to engage in or encourage educational television broadcasting and is eligible to receive a license from the Federal Communications Commission for a noncommercial educational television broadcasting station pursuant to the rules and regulations of the Commission in effect on April 12, 1962; (2) that necessary funds to construct, operate, and maintain such educational television broadcasting facilities will be available when needed; and (3) that such television broadcasting facilities will be used only for educational purposes. (Educational Television Facilities Act, 1962, p. 65)

Administration of the Grants

Grants were administered by the Department of Health, Education, and Welfare (HEW). The original funding was \$32 million, to be matched on an equal basis by new stations (federal funds were later "matched" on a 3 to 1 basis--to every local dollar the federal government would add 3 dollars) with the limitation that the money only be used for certain facilities, such as towers, transmitters, and other transmission apparatus. According to Section 392 of the Act a state could not receive over \$1 million in federal funds.

Upon approving any application under this section with respect to any project, the Secretary shall make a grant to the applicant in the amount determined by him, but not exceeding (1) 50 per centum of the amount which he determines to be the reasonable and

necessary cost of such project, plus (2) 25 per centum of the amount which he determines to be the reasonable and necessary cost of any educational television broadcasting facilities owned by the applicant on the date on which it files such application; except that (A) the total amount of any grant made under this section with respect to any project may not exceed 75 per centum of the amount determined by the Secretary to be the reasonable and necessary cost of such project; and (B) not more than 15 per centum of any such grant may be used for the acquisition and installation of microwave equipment, boosters, translators, and repeaters which are used to connect two or more broadcasting stations. (Educational Television Facilities Act, 1962, p. 65)

Through this Act, and its subsequent renewals, the federal government invested millions of dollars building and improving physical facilities for educational television. The growth in the number of ETV stations increased by 40% in the first 2 years. This federal assistance came at a crucial time--the Ford Foundation was no longer funding new stations and while the National Defense Education Act had helped the schools it had not provided any assistance to the educational broadcasters.

Community Licensees

Important to note in the ETV Act is the provision enabling community nonprofit educational groups to qualify for federal funding. While generally mentioned last in the eligibility legislation these groups were often first in acquiring the frequencies and obtaining federal monies. Private groups could institute broadcast

operations without encountering the bureaucratic tangles and politics found in educational institutions. So, although the frequencies were won by educational institutions, for use by educational institutions, provisions in the Sixth Report and Order and the ETV Act allowed outside groups and individuals to acquire education's frequencies; they received \$3 in federal money for every \$1 invested with the stipulation that programming of an educational nature be broadcast. In the years to come the term "educational" proved to be extremely broad.

Elementary and Secondary Education Act

Until the 1940s it was the case that overall responsibility for early education rested almost entirely with the states and local communities. But growing financial strains on local and state governments and the greater taxing power of the federal government led to slowly rising support in Congress for some general kind of federal contribution to early education. By the 1960s the newly-elected Democrat majority of the 89th Congress and Adam Clayton Powell's ascendancy to the chair of the House Committee on Education and Labor encouraged funding of early education.

Federal School Aid

The Elementary and Secondary Education Act (ESEA) provided the first general federal school aid in the nation's history. A product of Lyndon B. Johnson's "Great Society," the Act became law on April 11, 1965. The President, a former school teacher, said no measure he had "signed, or will ever sign, means more to the future of America" (Congress and the Nation, 1965-68, p. 710).

Program Production Emphasis

Under ESEA educational institutions received their first monies for ITV program production. While ETV broadcasters had resisted federal involvement in programming, educators welcomed government help because their limited resources would not allow the production of ITV programs of the quality they desired and because community-owned ETV operations (as opposed to ETV stations owned by educational institutions) had been steadily emphasizing cultural programming over instruction in an effort to garner mass appeal. To be eligible for ESEA funding the ITV programming must specify criteria for reaching those not served well by the public school system.

Economically Disadvantaged Students

Title I of ESEA allocated funds to local school districts (through state agencies) under a formula that multiplied the number of school children from low-income families (under \$20000 a year or on public assistance) by one-half of the state's average expenditure per school child. The purposes for which Title I funds could be used were largely left up to the local school districts. The Act said only that money was for programs designed to meet the special educational needs of educationally deprived children. The schools, for example, could reduce their class sizes, hire special teachers, buy special equipment including televisions, produce instructional programming--for an endless array of possibilities. Title I specified in Section 205(a)(1)

that payments under this title will be used for programs and projects (including the acquisition of equipment and where necessary the construction of school facilities) (A) which are designed to meet the special educational needs of educationally deprived children in school attendance areas having high concentrations of children from low-income families and (B) which are of sufficient size, scope, and quality to give reasonable promise of substantial progress toward meeting those needs, and nothing herein shall be deemed to preclude two or more local educational agencies from entering into agreements, at their option, for carrying out jointly operated programs and projects under this title. (Elementary and Secondary Education Act of 1965, 1965, p. 30)

Private School Television

Title I, Section 205 (a), stated that the local school agency must make provision for special services (such as dual enrollment, educational TV programs, or mobile educational facilities) in which private school children could participate

to the extent consistent with the number of educationally deprived children in the school district of the local educational agency who are enrolled in private elementary and secondary schools, such agency has made provision for including special educational services and arrangements (such as dual enrollment, educational radio and television, and mobile educational services and equipment) in which such children can participate. (Elementary and Secondary Education Act of 1965, 1965, pp. 30-31)

Supplementary Educational Centers

Title III of ESEA was designed to introduce programs into the schools by providing federal grants for supplementary educational centers and services that could serve as models for regular school programs or as centralized supplements to the curricula of individual schools. The Act specified a number of different services that might be offered, including specialized equipment and instruction for students in advanced language, art, and music courses; special services for people in rural areas, including mobile units; and the production of educational radio and TV programs. Section

303 of this act allowed general education ITV programming not necessarily designed to reference a specific target audience.

Grants under this title may be used for--(b) the establishment, maintenance, and operation of programs, including the lease or construction of necessary facilities and the acquisition of necessary equipment, designed to enrich the programs of local elementary and secondary schools and to offer a diverse range of educational experience to persons of varying talents and needs by providing supplementary educational services and activities such as--(4) specialized instruction and equipment for students interested in studying advanced scientific subjects, foreign languages, and other academic subjects which are not taught in the local schools or which can be provided more effectively on a centralized basis, or for persons who are handicapped or of preschool age; (6) developing, producing, and transmitting radio and television programs for classroom and other educational use; (7) providing special educational and related services for persons who are in or from rural areas or who are or have been otherwise isolated from normal educational opportunities, including, where appropriate, the provision of mobile educational services and equipment, special home study courses, radio, television, and related forms of instruction. (Elementary and Secondary Education Act of 1965, 1965, p. 31)

Originally, grants were made directly from the U.S. Commissioner of Education to the agencies applying for funds. However, in 1967 Congress rewrote the program to give most of the control to state education agencies (Congress and the Nation, 1965-68).

Cooperative Research Act

The Cooperative Research Act of 1954 provided federal construction aid for educational research facilities and funded research centers on a pilot basis. In 1965 the program was rewritten into ESEA as Title IV and furnished federal grants to various kinds of research groups. The Childrens Television Workshop ("Sesame Street," "The Electric Company") received funding under Section 2 (a) of this program.

The Commissioner of Education is authorized to make grants to universities and colleges and other public or private agencies, institutions, and organizations and to individuals for research, surveys, and demonstrations in the field of education, and for dissemination of information derived from educational research and to provide by contracts or jointly financed cooperative arrangements with them for the conduct of such activities; except that no such grant may be made to a private agency, organization, or institution other than a nonprofit one. (Elementary and Secondary Education Act of 1965, 1965, p. 45)

The Elementary and Secondary Education Amendments of 1966, Title I--Amendments to the Elementary and Secondary Education Act of 1965, Part D, permitted the research training program of the Cooperative Research Act to be carried out through government contracts as well as grants (Elementary and Secondary Education Amendments of 1966, 1966).

Education Amendments of 1967Education of the Handicapped Act

The Education Amendments of 1967, Title VI, amended the Elementary and Secondary Education Act of 1965 to establish Section 615 as the Education of the Handicapped Act. This act by Section 155 expanded the use of instructional media programs

to promote the educational advancement of handicapped persons by (1) carrying on research in the use of educational media for the handicapped, (2) producing and distributing educational media for the use of handicapped persons, their parents, their actual or potential employers, and other persons directly involved in work for the advancement of the handicapped, and (3) training persons in the use of educational media for the instruction of the handicapped. (Elementary and Secondary Education Amendments of 1967, 1968, pp. 804-805)

The Education of the Handicapped Act was influential to those producers of instructional television programming who included an educational component for the handicapped in their productions. However, most producers went well beyond minimum requirements and, in general, instructional media programs for the handicapped have been known for their state-of-the-art quality.

Bilingual Education Act

At the initiative of Congress, particularly the delegations from California and Texas, a program to

improve the education of children from non-English speaking families was authorized in 1967 (Congress and the Nation, 1965-1968). Title IV, Section 704, was significant for the influential bilingual (Spanish) instructional television programs produced under its funding ("Villa Alegre," "Carrascolendas").

Grants under this title may be used for--(c) the establishment, maintenance, and operation of programs, including acquisition of necessary teaching materials and equipment, designed to meet the special educational needs of children of limited English-speaking ability in schools having a high concentration of such children, through activities such as--(1) bilingual education programs; (2) programs designed to impart to students a knowledge of the history and culture associated with their languages; (3) efforts to establish closer cooperation between the school and the home; (4) early childhood educational programs related to the purposes of this title and designed to improve the potential for profitable learning activities by children. (Elementary and Secondary Education Amendments of 1967, 1968, p. 817)

Dropout Prevention Projects

Under Title VIII local education agencies with a high percentage of students from low-income families were given contracts and grants for

demonstration projects involving the use of innovative methods, systems, materials, or programs which show promise of reducing the number of such children who do not complete their education in elementary and secondary schools. (Elementary and Secondary Education Amendments of 1967, 1968, p. 806)

Similar to ESEA Title I, this program was defined broadly enough to allow funding for ITV producers with a low-income student component in their educational programming. The Bilingual Education Act also had a Provision for "programs designed for dropouts or potential dropouts having need of bilingual programs" (Elementary and Secondary Education Amendments of 1967, 1968, p. 817).

Summary

During the late-1950s and early-1960s ITV became part of a national agenda to alleviate a future shortage of scientists. Legislation was enacted in response to the Soviet Union's technological lead as indicated by Sputnik, the world's first satellite. ITV was viewed as able to deliver scientific instruction cheaply and efficiently to classroom students. The NDEA put television receivers in the classroom and the ETV Act funded equipment for educational television stations.

Racial desegregation in the school brought to awareness the problems of disadvantaged students. The government viewed ITV as a means for alleviating problems in this area. The ESEA funded ITV programs which provided instruction for the educationally disadvantaged and for programs which developed instruction within a format promoting interracial cooperation and harmony.

CHAPTER V IMPLEMENTING ITV: AGENCIES AND ORGANIZATIONS

While the federal government funded school ITV operations and ETV broadcast stations, several organizations and agencies coordinated and promoted the integration of ITV into the educational curriculum. In the following sections these organizations have been categorized by their overall network operations.

NETRC/NET: The 4th Network

In 1952, the Ford Foundation's Fund for Adult Education established the National Educational Television and Radio Center (NETRC) at the University of Michigan to serve as a program production agency and resource for educational television materials (Ford Foundation, 1956). Foundation grants from 1953 to 1964 totaled over \$21 million (Ford Foundation, 1961).

NETRC obtained programs through contracts with educational television stations, closed-circuit and university stations, and commercial production facilities (Houk, 1963). By 1956 the Ford Foundation was supplying quality videotape recorders to all stations affiliated with NETRC. A grant from 3M supplied videotape for each recorder.

In 1959 NETRC moved its administrative offices to New York while Ann Arbor, Michigan, remained as the technical and distribution center. By July, 1961, a total of 51 educational television stations as affiliates of NETRC received 10 hours a week of taped program material. National program production and distribution costs for NETRC operations approximated \$3.7 million--10% garnered from station affiliate fees with the remainder from foundation grants, special production contracts, and related sources (Nelson, 1962).

NETRC and its affiliate stations subsequently adopted the designation "NET," and were referred to as the "4th Network" (Houk, 1963). NET claimed 10 million regular viewers and a potential national audience in excess of 26 million persons.

NETRC's ITV programming emphasis was on science, humanities and the arts, social science, children's programs, and public affairs (National, 1961). Today NET is the center of the main distribution system for public television programming in the United States.

Instructional Television Libraries

The following ITV libraries were started with federal funds to bolster the distribution of instructional television programming. They arose to fulfill similar needs but each had a different agenda.

Eastern Educational Television Network

The Eastern Educational Television Network (EEN) began in 1960 as a community service organization to foster program exchange. EEN marked a landmark in the development of educational television services--the "library" concept for instructional television had begun.

From the 2 pioneer stations involved in the organization, WGBH of Boston and WENH of the University of New Hampshire, the system grew to include 42 educational television stations in 11 states linking East Coast cities from Philadelphia to Montreal (Hull, 1962). EEN became known as the ITV library distributed over the airwaves. Programming originated from WGBH, Boston, headquarters for EEN. In the early-1980s EEN discontinued ITV operations for reasons of unprofitability.

National Instructional Television/AIT

The second phase of the federally funded ITV library concept created the National Instructional Television Library (NIT), started in 1962 by the U.S. Office of Education as a 5-year demonstration to determine whether a national clearinghouse for recorded instructional television programming would be educationally desirable and economically feasible.

The first 3 years of the demonstration NIT was administered by National Educational Television (NET) in New York City. In 1965 NIT became the National Center for School and College Television (NCSCT) and began operations under the Indiana University Foundation in Bloomington, Indiana (AIT, 1984). The Indiana University Audiovisual Library was the model for the concept. Oli Larson of Indiana University was the main person behind the operation. His group initiated the effort to evaluate, catalog, and distribute by grade NETRC programs created from 1956 to 1958.

When the United States Office of Education demonstration project (NCSCT) was completed in 1967, the Indiana Foundation provided partial support for continuing operations. In 1968 NCSCT changed its name to the National Instructional Television Center (NIT). By 1970, NIT had become self-supporting, although it remained a project of the Indiana University Foundation until its transfer to the Agency for Instructional Television in 1973 (About AIT, 1981-82; AIT, 1984).

Technically, the Agency for Instructional Television (AIT) is a nonprofit American-Canadian organization established to strengthen education through television and other technologies. AIT is governed by a board of 18 directors, including appointees of the

Council of Chief State School Officers and the Canadian Council of Ministers of Education.

According to their 1981-82 report AIT developed joint program projects involving state and provincial agencies and acquired and distributed a wide variety of television and print materials for use as learning resources. AIT in 1981-82 offered more than 100 instructional video series, with each series containing on the average 15 to 30 programs of approximately 15 minutes each. Most of the series were designed for primary and secondary students; however, there were many courses on vocational education and teaching/professional development. The bulk of the programming was in the areas of arts, career development, early childhood, economics, foreign languages, geography, government, guidance/mental health, health/safety/physical education/nutrition, history, language arts, library skills, mathematics, parenting, science, or social studies.

Consortium development process. During its 2-year demonstration (1965-1967) NCSCT established lines of communication with educational broadcasters, state departments of education, and state commissioners of education. This team approach helped in establishing ITV production values, in identifying curriculum areas where television could be most useful, and encouraged the

emergence of intra-state cooperation in program production, distribution, and utilization. This is AIT's most laudable achievement--the consortium development process--in which many agencies pooled their resources to create major classroom series beyond the means of any one agency (About AIT, 1981-82).

Joint program development allowed two kinds of projects: (1) cooperative projects large in budget and scope involving consortia of state and provincial education agencies which provided funding and overall guidance and (2) generally smaller projects in which state, provincial, and local agencies desiring to use the materials agreed to help fund their development (AIT, 1984). Consortium projects have grown through the years from "Ripples" produced in 1970, with a budget of \$256,000 including the consortium contribution of \$190,000, to "ThinkAbout," with an initial cost of \$4.2 million (Middleton, 1979).

Skills essential to learning. "ThinkAbout" was Phase 1 of the Skills Essential to Learning (SEL) project--the most ambitious ITV productions ever undertaken. Over 40 educational agencies coordinated finances and talent for its development. In addition, Exxon and the Ford Foundation together donated close to \$600,000 and the Corporation for Public Broadcasting financed \$1.4 million. SEL seeks to strengthen the

ability of viewers to reason systematically, think confidently and flexibly, manage their own learning, and communicate effectively. "ThinkAbout" reached the nation's classrooms beginning in 1979. Mainly for the 5th and 6th grades "ThinkAbout" covered alternatives, estimating, classifying, generalizing, reshaping information, and communicating.

The series originators compromised between the behavioral objective approach of the educational technologists and the broad aims of the educational humanists (Sloan, 1980). Overall, the humanists triumphed so the series was concerned with the discovery of problems, interrelationships, and solutions rather than quantifiable testing results. "ThinkAbout" emphasized divergent thinking and left open the question of how much abstraction children can accommodate when they have begun to think conceptually. Designers avoided developmental theories such as Piaget or Bloom (Sloan, 1980). The series seemed to reflect John Dewey's belief that students should be taught those skills that they can transfer to their own lives, that content should be relevant, and that children should learn to inquire more intensively so as to improve social conditions (Sloan, 1980).

Phase II of SEL was completed in 1983 and consists, for grades 4, 7, and 8, of three problem-solving skills

in the context of mathematics, language arts, and science (AIT, 1984).

Great Plains Instructional Television Library

The last of the 3 federally funded ITV libraries evolved from a study by Wesley Meierhenry and Jack McBride at the University of Nebraska. They sought to ascertain the needs and plans of educational systems and institutions for the exchange of ITV teaching materials. The survey was commissioned by the Educational Media Branch of the United States Office of Education, under the direction of Dr. Walter Stone, under the provisions of the National Defense Education Act, Title VII, Part B (Meierhenry & McBride, 1962).

In this study they stated the problem as one of information stagnation--with ITV production entities producing programs without reference to similar developments in other areas of the country.

There has been a great development of television programs for direct and/or supplementary instruction at elementary, secondary, and college levels. Programs have been developed in various parts of the country without reference to similar developments in other parts of the country. There has been a minimum exchange of information on these materials and practically no exchange of the programs themselves. In order to conserve time, energy, and money, it would seem urgent to study the present status of the field; to determine the likely future developments, and to recommend a plan, either national or

regional, for some type of distribution system. (Meierhenry & McBride, 1962, p. 266)

In the study it was further specified that such a national center demonstrate experience in the production and circulation of materials at a national level, have equipment and facilities which might be developed further at minimum cost, be highly thought of by educators and by those interested in the television medium, and have a staff experienced in both television production and distribution (Meierhenry & McBride, 1962).

The Great Plains National Instructional Television Library (GPN) was subsequently maintained by a federal grant in 1962 as a regional ITV library. Since 1966 GPN has been operating on a totally self-sufficient basis through the national sale, rental, and duplication of high quality educational television and classroom programs (Public Telecommunications, n.d.). Together AIT and GPN are the nation's largest ITV libraries and ITV program distributors. GPN's library holds over 145 titles and their annual distribution is approximately 300-400 courses or 5,500 lessons. The stated mission of GPN is to "identify and to duplicate and distribute quality videotaped instructional television programming to educational institutions and agencies" (GPN, 1984, p. 1).

GPN has recently begun to produce ITV programming. In 1983 GPN produced the highly acclaimed "Reading

Rainbow" series with WNED-TV, Buffalo, New York. For this production GPN received grants totaling \$1.4 million from the Corporation for Public Broadcasting and the Kellogg Foundation (GPN, 1984).

Banking system. One of the most notable achievements of GPN was their introduction of the ITV "banking system." This operation was instrumental in promoting cooperative efforts among state educational agencies in the early days of ITV.

In accordance with their original goal of fostering ITV program exchange and providing a forum for the exchange of information about instructional television GPN became a depository for programs produced by the states. Under their banking system for each ITV program a state deposited with GPN they would receive a free program from another state (GPN, 1984). This system was instrumental in boosting both the overall quality and quantity of programs available to the schools.

Teacher royalties. One of the initial obstacles to successful program productions in the early days of ITV involved the issue of "talent rights" or "creative rights." The television teachers often assumed increased work loads when involved with ITV productions and felt they deserved financial rewards. Teachers sought the same royalty arrangements as those working in commercial television.

GPN perceived that the royalty issue was hindering the development of quality ITV programming and sought to alleviate the problem. GPN was the first national organization to establish a teacher incentive program. Under their system television teachers received merit bonuses for the production of a successful series (GPN, 1984).

Multi-State Networks

Concerned citizens formed agencies and organizations to promote ITV as early as 1948--most of which are still in existence and operating in conjunction with state departments of education, schools, ETV stations, and government entities. These cooperative arrangements among ITV broadcasters and among schools using ITV emerged simultaneously with the development of the medium. The expense involved in television operations necessitated collaboration if cost-effective quality programs were to be produced and ITV users realized that increased distribution efficiencies could be obtained through ITV administrative cooperation.

The multi-state networks are involved in the implementation of ITV in the classroom. These networks operate in close association with ETV stations active in ITV and with the legislative agencies and state departments of education responsible for ITV in their

member states. The networks acquire programming from the previously-discussed ITV libraries.

For payment of a fee, member stations gain the benefits of group participation. These benefits include group purchase discounts, shared programming, and cooperative productions.

There are presently 3 multi-state networks serving K-12 schools in the United States. These include the Southern Educational Communications Association (SECA) serving the Southeast and Eastern U.S., the Central Educational Network (CEN) serving the Midwest and Eastern U.S., and the Pacific Mountain Network (PMN) serving the Western U.S. Already mentioned, the 4th network has been the Eastern Educational Television Network which discontinued ITV in the early-1980s. As a consequence CEN and SECA have enlarged their operations to cover schools of the Northeast.

SECA, CEN, and PMN share satellite time and programming over the Westar 4 satellite. One of the networks will use the satellite uplink of a member station (on a rotating basis) to broadcast the chosen programs via satellite across the United States. The member stations receiving the broadcasts then either relay (rebroadcast) the programs to their schools or tape them for future needs.

Before analyzing 2 of the multi-state networks in depth (SECA and CEN) it is necessary to look at the following pioneer ITV organization to understand the processes through which K-12 cooperative arrangements evolved.

Southern Regional Education Board

Though the Southern Regional Education Board (SREB) is an organization for higher education it provided a model for K-12 ITV organizations. The SREB was the nation's pioneer group in establishing regional planning and action for the effective multi-state use of educational programming (SREB, 1985). SREB set in motion processes of administrative cooperation and organized legislative lobbying which proved to greatly advance the cause of instructional television.

In operation since 1948, SREB was created at the request of Southern governors working directly with state governments, academic institutions, and other related agencies. SREB researches and reports on needs, problems, and developments in education; conducts cooperative programs to improve training; and serves as fiscal agent and administrator in interstate arrangements for regional services and institutions. SREB is governed by a board containing the governor of each of the 14 member states and is supported through appropriations

from the Kellogg Foundation, the National Endowment for the Humanities, the U.S. Department of Education, the U.S. Department of Health and Human Services, and through appropriations from the member states.

The overall goal of the SREB is "to advance education and, in so doing, to improve the social and economic life in the South" (SREB, 1985, p. 4). The effect of the SREB was to help establish the Southeastern United States as a leader in the integration of ITV into the educational curriculum.

Southern Educational Communications Association

The Southern Educational Communications Association (SECA) is the first of the two K-12 multi-state networks to be analyzed in the present study. South Carolina, home of SECA, has been a leader in ITV since 1954 when South Carolina sponsored one of the first closed-circuit television systems in the country (R.P. Richardson, personal communication, 1984). In 1967, Henry Cauthen, Howard Holst, Ed Wegener, Lee Reeves, and several other ETV station operators, representing 12 ETV stations, joined to form SECA and elected Dr. Lark Daniel as their first president (P.A. Pantsari, personal communication, 1984).

SECA is a nonprofit regional association of public radio and television stations primarily serving the

Southeast. Interviews with Reta P. Richardson, SECA Director, Center for Instructional Communications, and Peter A. Pantsari, Director of Program Services, SECA, revealed three reasons for SECA's establishment: (1) to ensure proper national recognition for the ETV stations of the Southeast, then being undermined by lack of associations for ETV station operators; (2) to utilize the SECA as a library for program exchange between instructional program producing stations; and (3) to encourage the SECA's sponsoring of workshops and conferences for training and professional growth (R.P. Richardson, & P.A. Pantsari, personal communications, 1984).

Membership fees are set according to each member's ability to pay. The appropriate fee is based on each station's community service grant from the Corporation for Public Broadcasting (generally 10%-25% of a station's yearly budget) which is ranked in comparison to the SECA region's yearly community service grant (SECA, n.d.). SECA purchases or leases programs from distributors and receives a substantial discount it then passes on to member stations which usually offsets their dues charges. Program purchases have grown from \$25,000 a year in 1970 to \$1.5 million a year in 1983 with savings for members of \$330,000 (P.A. Pantsari, personal communication, 1984).

There are several other services SECA provides its members: (1) the Educational Program Service is the marketing arm of SECA and under its guidelines ITV program producers are guaranteed 30% of the gross receipts from the sale/lease of their programs and up to 70% of excess revenue after expenses; (2) the SECA helps stations fund local programming for regional and/or national distribution through its Production Fund--established by a grant from the Corporation for Public Broadcasting; (3) the SECA through Consortium Productions helps secure funds from member stations in the region and, in turn, stations that buy into the productions have unlimited rights to use that production; and (4) the SECA provides a block of free programming to its members each weekday morning by Westar 1 on those occasions when there are multiple demands for library programs, for experimental programming, or for production programs and promotions (SECA, n.d.).

Central Education Network

The CEN was founded in 1967 but did not begin its ITV service until 1973. An interview with Ted Lucas, Vice President, Managing Director of CEN's Instructional Services revealed that one of the reasons for the Midwest's delay was their past experience with the Midwest Program on Airborne Television Instruction

(MPATI) which proved to be a failure (see Chapter VI). Apparently, Indiana, MPATI's home state, has still not fully accepted ITV. The lingering impression left by MPATI is that of ITV as a technical demonstration or teacher replacement rather than an instructional aide for the classroom teacher.

Both CEN and SECA were founded by a group of ETV station operators who joined forces for professional growth, national representation, and group purchasing discounts. However, CEN is structurally different from SECA in that CEN grants memberships on a statewide basis to educational organizations as well as to ETV stations (T. Lucas, personal communication, 1984). This has resulted in state boards of education becoming active ITV participants in the Midwest, mitigating somewhat dominant public television stations lacking ties to K-12 schooling.

There are approximately 90 stations in the CEN network and nearly 75 carrying ITV programming. In a personal communication Lucas in 1984 pointed out that the best use of the satellite transmission is not necessarily to rebroadcast the entire satellite schedule, but to cut into the transmission, or to tape it, and then add in any supplementary material the classroom teacher may require.

U.S. Office/Department of Education

With a request in 1949 for the allocation of television frequencies for education the United States Office of Education became involved with ITV. A more official commitment began in 1958 when the National Defense Education Act established the New Educational Media Advisory Council within the U.S. Office and the Commissioner of Education became responsible for the distribution of federal ITV funds. The Office of Education was also influential in establishing the NIT and GPN instructional television libraries mentioned earlier in this chapter. The Office was not directly involved in the production of ITV programming but functioned solely as a software underwriter.

The U.S. Office of Education became the U.S. Department of Education with cabinet rank in 1979. ITV came under the Office of Educational Research and Improvement with the objectives of research, development, demonstration, dissemination, and assessment of programs and technologies beneficial to the schools. Their budget allows them substantial funds to increase the potential for school improvement of some programs.

According to Dr. Malcolm Davis, Senior Program Coordinator for the Office of Educational Research and Improvement of the U.S. Department of Education, Office of Education involvement with ITV gained momentum with

the rise of civil rights issues and the need for programs aimed at easing problems associated with educational deprivation (personal communication, 1986). Child development was also a concern of the general public during the late-1960s and early-1970s. The call by Senator Walter Mondale of Minnesota for television to help the young deal with the attitudes of others and themselves led to the Emergency School Aid Act TV program of 1972 (see Chapter VIII).

The Office of Education initiated ITV programming with its support of the Childrens Television Workshop for the production of "Sesame Street." The Office believed that children could be instructed through television in an atmosphere of social harmony.

Between 1968 and 1985 the Office/Department sponsored 56 series and 3,018 shows, all captioned for the hearing impaired. The Department invested \$200 million in these series and secured an additional \$45 million from such outside sources as the Corporation for Public Broadcasting, National Science Foundation, and Ford Foundation. Hardly any funding came from commercial interests. Advances in production techniques during these years caused ITV costs to escalate from \$1000 per minute to \$10,000 per minute for an average 30-minute broadcast cost of \$200,000 to \$300,000 in 1985. The Department peaked in expenditures between 1976 and 1978.

Davis stated that ITV program producers solicited funds from the Department in two ways: (1) by Open Solicitation the ITV producers identified a need and requested funding for appropriate programming, or (2) in Request for Proposals the Department would define area applications and then request proposals outlining the budget, evaluation criteria, and peer review process (personal communication, 1986). Program proposals were requested or solicited, and were evaluated for the experience of the producing agent, the proposed staff, and the financial requirements of the project. To be funded programs needed guides containing educational objectives and approval for off-the-air taping for educational use without charge.

Presently these federally-funded series are held in the Great Plains National Instructional Television Library. Although these programs are available to public, commercial, or cable television channels, commercials are limited to before and after the program with a station identification (Educational Television, 1985).

Summary

The NETRC and the national instructional television libraries fostered ITV program exchange in the early days of ITV. They functioned primarily as program

depositories and ITV distributors. Producing entities would place their programs with one of these distributors who would then lease or sell the programs to the stations. In addition, AIT coordinated consortium productions among the states.

The multi-state networks arose through cooperative efforts of the stations to share the expenses and expertise necessary for the production of successful ITV series. They subsequently became the intermediaries coordinating ITV activities among the distributors, the stations, and the schools. They are responsible for the process by which ITV programs are acquired from the distributors and broadcast by satellite to stations across the United States, who in turn relay the programs to the schools.

The chief federal education agency was an important proponent of ITV from 1949 and the time of their request for television frequencies for education, through the 1960s and their appointment to distribute federal NDEA funds, and through the 1970s with their support for the production of ITV programs.

CHAPTER VI
CASE STUDIES: ITV GROWTH ERA 1955-1970

The growth in ITV stations and ITV programming in the decade following the Sixth Report and Order went from none in 1952 to 62 educationally-owned stations by 1961 with 28 more soon to follow (Hull, 1962).

For where there was nothing, we now count some sixty noncommercial educational television stations on the air, representing a total expenditure in the neighborhood of \$60 million, with a current market value of perhaps \$200 million; costing some \$15 million a year to operate; and capable of serving fifty million viewers with programs imagined, created, and sponsored in the name of education. (Powell, 1962, p. 3)

By 1960-61 an estimated 3 million students in 7,500 secondary and elementary schools received televised instruction from educational television stations, while an additional 1.5 million students utilized closed-circuit television for the same purpose (Hull, 1962).

Educational or instructional television became a major financial force. A survey done in March, 1961, by the National Educational Television and Radio Center placed the capital value of the 55 ETV stations then broadcasting at approximately \$29.4 million with an annual operating budget of about \$14.8 million (Nelson,

1962). Of the 53 ETV stations affiliated with NETRC, the median capital investment of the 17 community-operated stations was \$497,000 with an average operating budget of \$275,000; the median capital investment of the 19 college- or university-owned stations was \$250,000 with an average operating budget of \$175,000; the median capital investment of the 8 stations operated by K-12 school systems was \$553,000 with an average operating budget of \$293,000; and the median capital investment of the 9 stations licensed to a state authority was \$697,000 with an operating budget range from \$80,000 to \$842,900 (Nelson, 1962).

Sources of income for educational television stations varied from tax revenues, to contributions, to fees for contracted services. NETRC found that funding was derived 57% from tax sources of which 31% came from public schools and boards of education and 26% from state, county, or city appropriations; 20% from private sources of which 8% came from private colleges and universities, 5% from commercial interests, and 7% from civic groups, local foundations, and individuals; and 23% from special sources including 6% from the Ford Foundation Fund for the Advancement of Education projects and 17% from assorted other projects (Nelson, 1962).

Thus, by the early-1960s ITV was making a significant educational impact on the schools while

wielding considerable financial and political influence. Encouraged by organizations such as the Southern Regional Education Board (Chapter V), ITV programming permeated the political and economic structure of schooling in the United States.

State Networks

In 1962 the Educational Media Branch of the United States Office of Education authorized Vernon Bronson of the National Association of Educational Broadcasters to study the plans of educational institutions, school systems, and communities for the use of educational television. He concluded that the majority of the states were either implementing or planning ITV operations. In estimating the channel allocations needed to carry out planned broadcasting he noted a drastic shortage of television frequency allocations for educational use (Bronson, 1962).

A case study will be analyzed from each of three periods: the mid-1950s when state departments of education networked ITV; the late-1950s to early-1960s, considered the middle stage in ITV development; and the mid-1960s, the later stages of ITV development. Alabama will be the first case study considering the state was the first to network ITV operations, followed closely by Florida and Oklahoma.

Alabama Educational Television Network

In 1955 the Alabama State Legislature appropriated \$500,000 to open the first state-wide educational television network in the United States. The Alabama Educational Television Network was probably formed in response to a shortage of qualified teachers in several subject areas. In the 1954-55 school year nearly 500,000 pupils were instructed by teachers with emergency certificates (Ford, 1961). These teachers could utilize telecourses to prepare for certificates and college degrees.

In 1956 the Ford Foundation's Fund for the Advancement of Education provided grants to assist the state in production of instructional programming. VHF television stations in Andalusia, Birmingham, and Munford initiated broadcasts with the assistance of microwave relay stations and covered 30,000 square miles to reach 430 schools with 65,000 pupils in 80% of the state's public schools.

The instructional programming was produced by the studios at the University of Alabama, Auburn University, and the Greater Birmingham Area Educational Television Association (Alabama Educational Television Commission, n.d.). The telecasts of 15- to 30-minute lessons

operated from 8:30am to 2:30pm five days a week. A core of courses plus Russian, French, Spanish, chemistry, biology, and geography was given from 1 to 4 times a week. While students had only their textbooks, teachers had study guides, manuals, and other materials from the Alabama Department of Education (Alabama Educational Television Commission, n.d.).

Massachusetts School Television

As of October, 1959, WGBH-TV, Boston, was transmitting telecourses to 140 school systems and approximately 500,000 pupils in a state-wide ITV project referred to as the "21-Inch Classroom." Though participant schools were located mostly in Eastern Massachusetts, schools in New Hampshire, Rhode Island, and Connecticut also participated (Kumata, 1960).

The 1959 fall schedule included the following programs: "Parlons Francais" (grade 4), "Focus" (grades 11 and 12), "Exploring Nature" (grade 5), "Here and There" (kindergarten, and grades 1 and 2), "Lines and Shapes" (grades 3, 4, and 5), "Science" (grade 6), and the "President's Press Conference" (high school) (Kumata, 1960).

Maryland Instructional Television

The Maryland State ETV Advisory Committee reported in February, 1964, to the Maryland State Board of Education on plans and methods of financing educational television throughout the state, factors bearing on state responsibility for financial support of educational television, the role of the federal government in financing ETV, the contribution of local school systems to the cost of ITV services, and private sources of support. The State Board of Education approved the recommendations of the Advisory Committee for the establishment of an ETV/ITV system and recommended that capital costs for providing broadcast and interconnection facilities be borne by the state, that matching federal grants be requested where applicable, and that a minimum amount of programming be financed by State funds (Jansky & Baily, 1964).

In 1966, the Maryland General Assembly established Maryland Instructional Television (MITV) as a division within the Maryland State Department of Education (Maryland ITV, n.d.). Subsequently, the Maryland Public Broadcasting Commission created the Maryland Center for Public Broadcasting which owns the state's ETV production facilities. The State Department of Education, through MITV, leases these facilities for the production and

distribution of instructional programming to the schools (F. Batavick, personal communication, 1984).

Frank J. Batavik, Production Branch Chief, Executive Producer, MITV, Maryland State Department of Education believed that MITV's late start in the ITV field was a distinct advantage. In contrast to many ITV operations, MITV's growth, he maintained, has been steady and they have been able to learn from the mistakes of the past (personal communication, 1984).

Maryland's production process is as follows: The State Department of Education surveys the schools, locates a need, and requests MITV to produce a program or series. The request goes first to the instructional design team who formulates and scripts the program. Next, the program is produced, and finally, field services markets the product throughout the state (F. Batavick, personal communication, 1984). MITV provides Maryland schools with series covering a variety of subjects including reading, social studies, art, health, career education, language, mathematics, science, and economics. Although the programs are designed primarily for Maryland schools, MITV often distributes its programs nationally through the Southern Educational Communications Association, the Agency for Instructional Television, and the Public Broadcasting Service. MITV's programs are of a very high quality and they have won an

Emmy for "Readers Cube," and a Peabody Award (the only ITV station to win such recognition from commercial broadcasters) for "Terra Our World." MITV produces between 800 and 1000 production minutes a year, both live and studio (F. Batavick, personal communication, 1984). More than 75 series comprise Maryland's annual broadcast schedule, one-third produced by MITV (Maryland ITV, n.d.).

Working with MITV the State Department of Education incorporated the "back-to-the-basics" movement. Through MITV the Department produced videotapes which defined the basics for teachers. Thus, "back-to-the-basics" did not mean elimination of ITV in Maryland.

Regional Networks

Regional ITV networks emerged with the initial experiments in the medium. The Dade County, Florida, and Washington County, Maryland, ITV operations discussed in Chapter III are examples of early regional networks. ITV proponents quickly realized that the high costs of television necessitated cooperative efforts.

The Southern California Regional Educational Television Advisory Council (RETAC) is the largest regional instructional television consortium in the United States. RETAC began operations in 1960 and as of 1980 served 600 schools and more than 1,000,000 Southern

California students in all grade levels. It is under the Division of Instructional Media and Information Systems of the Office of the Los Angeles County Superintendent of Schools in Downey, California (RETAC, n.d.).

Working with other agencies RETAC helps broadcast more than 3,000 hours of instructional programming each school year. RETAC also provides its member schools with the following instructional television services: (1) ITV teachers' study guides, (2) workshops to improve utilization of television instruction and television equipment, (3) leadership to review and develop legislation in support of ITV, (4) consultant services in development and production of regional and national television series, and (5) consultant services regarding cable television. Their membership is 90 cents per unit of average daily attendance and is paid by the participating school district (RETAC, n.d.).

Distribution Experiments

With the proliferation of ETV stations, ITV programming, and regional and state ITV network operations of the 1950s came ambitions for a large-scale ITV cooperative experiment. Such effort occurred in the early 1960s and added a major new dimension to ITV operations in the United States.

Airborne ITV/MPATI

The Midwest Program on Airborne Television Instruction (MPATI) was one of education's first large-scale cooperative efforts. MPATI began in 1960 with \$15 million in seed money from the Ford Foundation and \$2 million from various other sources. The project involved a DC-6 airplane with broadcast capability equal to the technical capability of 2 stations. The airplane circled in 20-mile figure 8's at 23,000 feet over Montpelier, Indiana, broadcasting school lessons over 144,000 square miles, covering 6 Midwestern states. First, some background on the need for such an experiment.

This effort was a Midwestern response to several national trends in the early-1960s. Student enrollments were increasing rapidly resulting in a teacher shortage and budget constraints. Moreover science and mathematics curriculums were increasing in diversity and difficulty. Some educators were looking for a way to deliver quality instruction at a low per student cost. Proponents of ITV seized the opportunity to see if their technology could meet this objective. Money for instructional television was readily available from both federal and state government agencies and from foundations and corporations.

The only limits on how many students ITV could serve was the strength of the broadcast signal. Also, the more students served the lower the per pupil cost of the program and the easier to provide cost effective programming within budget limitations. The MPATI planners turned to airborne TV because an effective instructional television curriculum would require at least 6 separate television channels which would be technically and economically beyond the capacities of a ground-based broadcast system (Owens, 1965).

On paper, the economics of airborne instruction appeared astonishingly practical at a cost of \$1-\$2 per pupil per year when serving the 9 million students in the target area. A team was formed in 1959 to develop a distribution system based on airborne television. Detroit superintendent of schools and former United States Commissioner of Education Samuel Miller Brownell chaired the project. Purdue University President Frederick Hovde offered the facilities of his university as home base for the operations (Owens, 1965).

In addition to the Ford Foundation financial backers included U.S. Steel, Esso Educational Foundation, Westinghouse Electric Corporation, Alfred P. Sloan Foundation, Corning Glass Company, Ampex Foundation, the Fund for the Advancement of Education, and General Electric Corporation Foundation. Major national

education organizations such as the National Education Association, the Parent-Teacher Association, and the U.S. Office of Education also advocated the MPATI effort. (Owens, 1965).

Groups of educators from throughout the Midwest met regularly to determine the instructional design of the programs. A national talent search was launched in December, 1959, and over 400 candidates applied for the 24 television teaching positions. Meanwhile, the MPATI course development staff contracted with New York University; WCET, Cincinnati; WTTY, Chicago; the University of Detroit; Purdue University; WHY, Philadelphia; the University of Michigan; Michigan State University; and the University of Wisconsin in Madison for the development of ITV programs.

The FCC granted the Purdue Research Foundation an experimental transmission license in December, 1959, to begin telecasting in September, 1961. Westinghouse Electric Corporation was contracted by MPATI to modify the two DC-6 aircraft and install the broadcast equipment according to the engineering concept conceived in 1944 by a Westinghouse radar expert named Charles E. Nobles and his colleague Ruben Lee. The total broadcast area included all of Indiana and parts of Illinois, Kentucky, Michigan, Ohio, and Wisconsin. This 144,000 square mile area was subdivided into 20 sub-regions under area

coordinators who promoted and integrated the telecasts into the school curriculums (Owens, 1965).

Participating schools were equipped with special UHF receiving antenna at a cost of \$500 per room. The classroom teacher was provided with a teachers' guide which gave objectives of the telecast, the concepts to be developed, and suggested reading and hints for follow-up work. The classroom teacher would keep in charge of the class with the television lessons used to augment instruction (Owens, 1965).

The television teachers had a team of curriculum specialists, research assistants, and artists to assist in the planning, development, and production of TV lessons (courses). MPATI broadcast 24 lessons a day. Some students viewed only 1 lesson a day, some 4 or more. The ITV lessons included math, history, science, English, music, art, and Spanish (Houk, 1963). Program costs were between \$1500 and \$2000 per program (Owens, 1965).

In the first few years of operations MPATI's broadcasts received favorable reviews. The Ford Foundation donated an additional \$7.5 million in 1962 to continue MPATI and to allow time for the system to become financially self-sufficient. The plan was to increase financing by the schools at a phased rate sufficient to end foundation support by 1966 (Owens, 1965).

By the 1963-64 school year MPATI reached 1,300 member schools and colleges. Each school paid \$1 per pupil enrolled in the school up to a maximum of \$850 per school. For 1964-65 school membership increased to 1,850. Although the ITV transmission costs of MPATI were already about one-half that of traditional ITV broadcast operations, expanded broadcast capabilities to more students would result in more savings. Upon application MPATI in 1966 received additional frequencies in the UHF band. In granting increased allocation the FCC commented as follows:

MPATI has made available to every city, village, and crossroads school in its area quality instructional material at a relatively small cost. It has made a valuable contribution to many small and medium sized schools in the rural areas of the Midwest which otherwise could not afford educational television. (Owens, 1965, p. 34)

By the 1966-67 school year the Ford Foundation began expecting members to take over the costs of MPATI, but they refused (Sherman, 1964). Both teachers and school administrators complained about mechanical difficulties, scheduling problems, inadequate manuals, and about a lack of correlation with textbooks (Owens, 1965). Plus, despite the intent of the project to use ITV as a teacher supplement the classroom teachers felt overshadowed by the television teachers. Researchers further threatened teachers by testing the effectiveness of ITV against their classrooms. Of the 13,000 schools

in the broadcast area only 1,700 accepted MPATI, too few for the system to survive without foundation money (Sherman, 1964).

In ending operations in the late-1960s MPATI's financial supporters cited the emergence of satellite communications able to cover the entire nation with their broadcasts as eliminating the need for airborne ITV (satellite ITV distribution experiments are discussed in Chapter IX). However, many MPATI researchers placed the problems at the classroom implementation level and with issues arising from ITV's alienation of the classroom teachers (Sherman, 1964; Owens, 1965; Planic, 1967).

Microwave ITV/ITFS

An instructional television fixed service (ITFS) system is a microwave signal beamed by line of sight to a receiving dish which, through a downconverter, reproduces the signal on a conventional television set. Licensees are allowed to broadcast up to 4 channels at one time with each channel requiring a separate transmitter. One dish can receive all 4 signals.

The FCC Rules and Regulations, Section 74.901, define the service as a fixed station operated by an educational organization and used primarily for the transmission of visual and aural instructional, cultural, and other types of educational material to one or more

fixed receiving locations. ITFS eligibility requires a licensee to be an institutional or governmental organization engaged in the formal education of enrolled students or a nonprofit organization formed for the purpose of providing instructional television to such institutional or governmental organizations. The accrediting agency of the state department of education has some influence in determining whether applicants are licensed (ITFS, 1967).

In addition to being able to transmit 4 channels simultaneously, each carrying different programming, ITFS holds other advantages over traditional VHF/UHF transmission. Foremost was their monopoly over this form of transmission until the early-1980s when deregulation began allowing commercial interests to acquire unused channels. Second, is the cost and flexibility of this system's dual purpose transmitter allowing simultaneous transmission and reception of signals to and from adjacent stations. This is crucial to ITFS since the signal is limited to a 20-mile broadcast. Another benefit is the transmitter's costing \$100,000 to \$150,000 compared to \$1 million to \$3 million for a conventional television transmitter. Another cost benefit is that a signal slightly less than perfect will not interfere with other broadcasters in the microwave frequency range which allows the FCC to permit a reduction in technical

production standards putting ITFS costs as much as 75% below the costs of traditional educational broadcasts. A final advantage of ITFS is that it is an interactive medium because of its ability to both receive and transmit the signal simultaneously (Curtis, 1979).

Elementary and secondary school systems. In 1961 the FCC issued the Plainedge School System (Plainedge, Long Island, New York) a license to use television circuits in the then relatively uncrowded 2000-megacycle frequency range for distribution of instructional programming (Curtis, 1979). This was believed to be the first such authorization for ITV. On July 25, 1963, the FCC opened 31 channels in the 2500-2690 megahertz range for use by educational institutions and organizations under official designation of "Instructional Television Fixed Service."

By 1982 forty K-12 ITFS systems with a total of 306 channels broadcast to just over 3.5 million students. The stations delivered approximately 35 hours a week of programming of which about one-seventh was appropriate for any given student, or about 5 hours a week of pertinent instructional television programming per grade level at a cost of \$7 per pupil per year (Curtis & Thayer, 1983).

Catholic Television Network. There are 7 Catholic Television Networks (CTN) across the United

States in Brooklyn, Yonkers, and Uniondale, New York, and Chicago, Boston, Los Angeles, and the San Francisco Bay Area. The San Francisco network is the largest.

According to Lisa Navarro, Production Manager for the Bay Area Catholic Dioceses of the Catholic Television Network (CTN) the systems are privately owned, do not derive funds from the federal government, and are financed by costs added to the student's tuition at the rate of \$5.50 per student per year (personal communication, 1984). The Catholic dioceses funded Bay Area operations in 1969 under the direction of P.R. DuMaine who has since become Bishop of San Jose. The system has grown to include 21 secondary schools and 130 elementary schools. From their headquarters in Menlo Park, 4 additional transmitters expand their coverage to include 1,500 square miles. CTN's overall growth was steady from 1969 to 1976, leveled off temporarily, and then began rising again in 1980, and by 1984 membership had increased by 70%.

CTN utilizes a microwave 4-channel ITFS system and telecasts directly to member schools which are equipped with a receiving dish and downconverter (to convert the microwave signals for use on a conventional television receiver) costing approximately \$1,200. The number of television receivers per school is very high with some schools having a receiver in every classroom. There is

an ITV coordinator at each school. Videotape recorders are available at each high school and many of the elementary schools.

The Catholic Television Networks are primarily distribution centers. The Bay Area network leases 85% of its programs from the traditional ITV distribution centers and libraries. The other 15% of the programming is produced by the Bay Area network and is generally either religion-oriented or teacher training. CTN also has a newly established teleconference operation.

Elementary schools receive broadcasts on a daily basis from approximately 8am to 3pm. One of the 4 ITFS channels is reserved for special requests by the teachers and is generally used to reconcile scheduling conflicts by airing the desired program at the teacher's convenience. Some of their most popular programs are "Davey and Goliath," "Let's Draw," "Tomie dePaola Storytelling," and "The Living Bible." The most popular program categories are story series, religion, science, social studies, guidance, mathematics, art, health/fitness, and music.

Summary

From 1955 to 1970 ITV experienced rapid growth.

Federal programs financed ITV equipment and programming. Multi-state networks and ITV libraries established a mechanism by which programs could be shared thereby reducing ITV costs while regional and state education authorities networked ITV operations and brought a degree of standardization and control over programming schedules.

There were insufficient frequencies allocated for education to enact the comprehensive ITV curriculum supplement early planners had envisioned. As a result, programs appropriate for a given grade level were often found throughout the broadcast schedule causing severe equipment and curriculum scheduling problems. The search for additional methods for the distribution of ITV programming led to efforts in airborne instruction and activities in the microwave spectrum.

CHAPTER VII
TRANSITION: ETV TO PTV 1967 AND AHEAD

From the time of the Sixth Report and Order in 1952, through the late-1960s, those radio frequencies assigned to education for educational and instructional purposes served the schools with varying degrees of success. Educational television proved to be an extremely ambiguous term. Frequency utilization became dependent on station control with considerable variance in programming style among the license holders.

Universities used their frequencies for both mass audience informational and cultural programs, and for classroom instruction. In the early days of ITV the universities programmed instructional television for both K-12 and higher education audiences. In later years the universities distanced themselves from K-12 education.

The stations controlled by K-12 public schools originally used their frequencies for direct classroom instruction. These programs featured lecturers delivering instruction, with varying degrees of laboratory experiments and external world experiences introduced within the programs. In the years following the Carnegie Commission report and the Public Broadcasting Act, K-12 ITV programs, as broadcast by both

the universities and the elementary and secondary schools, evolved into programming of a more general nature. This change may in part have been due to the Public Broadcasting Act's shift in financial support away from instructional television toward "public," or cultural, informational television.

Community groups holding educational noncommercial licenses interpreted "educational television" to be a wide variety of programs of a noncommercial nature. They were often interested in programs that would draw a mass audience in hopes of garnering a greater market share and increased financial contributions. While many of the community stations originally had ties to education, these ties proved to be very thin and loosened considerably in the years following the Public Broadcasting Act.

Carnegie Commission Report

In December, 1964, at a conference of the National Association of Educational Broadcasters, Ralph Lowell of the Lowell Institute Cooperative Broadcasting Council proposed the establishment of a commission to study the financial needs of educational television and the manner in which they could be met. The efforts of Lowell; C. Scott Fletcher of the National Association of Educational Broadcasters; John W. Gardner, President of the Carnegie

Corporation and later Secretary of Health, Education, and Welfare; and Alan Pifer, Vice President of the Carnegie Corporation, led to the creation of the Commission.

Membership in the Commission was comprised of top-level representatives from higher education, media, business, politics, and the arts (Head & Sterling, 1982). Among the early commissioners were James R. Killiam, Jr., Chairman; James B. Conant, Lee A. DuBridge, Ralph Ellison, John S. Hayes, David D. Henry, Oveta Culp Hobby, J.C. Kellam, Edwin H. Land, Joseph H. McConnel, Franklin Patterson, Terry Sanford, Robert Saudek, Rudolf Stern, and Leonard Woodcock (Public Television, 1967, p. xi).

The Commission was asked to conduct a broad study of noncommercial television and to focus its attention principally, although not exclusively, on community-owned channels and their services to the general public and to recommend useful ways noncommercial television stations might develop in the future. In a letter endorsing the objectives of the Commission, President Lyndon B. Johnson wrote

From our beginnings as a nation we have recognized that our security depends upon the enlightenment of our people; that our freedom depends on the communication of many ideas through many channels. I believe that educational television has an important future in the United States and throughout the world. I look forward with great interest to the judgements which this Commission will offer. (Public Television, 1967, p. v)

The Carnegie Commission put forth 12

recommendations for the future of noncommercial television in the United States. The Commission recommended (1) concerted efforts at the federal, state, and local levels in support of educational television; (2) a federally chartered, nonprofit, nongovernmental corporation to be known as the "Corporation for Public Television," empowered to receive and disburse governmental and private funds to improve public television programming; (3) at least 2 national production centers free to contract with independent producers to prepare public television programs for educational television stations; (4) support for local program production; (5) wide distribution of locally developed programs; (6) educational television systems with facilities for live interconnection and satellite communications at preferential rates; (7), (8) and (9) improved program production techniques through research and development, technical experimentation, and specialized personnel recruitment; (10) an excise tax on television sets to pay for the Corporation; (11) new legislation to enable the Department of Health, Education, and Welfare to expand ETV operations and increase support for ITV programming; and (12) federal, state, local, and private educational agencies-sponsored

studies on the use of television in education (Public Television, 1967).

The objectives set forth in the Commission's report, released January 25, 1967, focused on the strengthening and expansion of the 124 existing ETV stations into a network of 380 functionally linked but individually operated stations and expansion of the ETV Facilities Act of 1962 through the elimination of requirements on the equipment eligible for federal funding to allow the acquisition of a full range of facilities (Congress and the Nation, 1965-68). The ETV network envisioned by the Carnegie Commission was exclusively for "public television" (PTV) meaning programs of a cultural, informative, entertainment orientation. In the words of the Carnegie Commission

The programs we conceive to be the essence of Public Television are in general not economic for commercial sponsorship, are not designed for the classroom, and are directed at audiences ranging from the tens of thousands to the occasional tens of millions. (Public Television, 1967, p. x)

The transition was from ETV stations broadcasting educational programming for families in the evenings and instructional television programming for students during schools hours, to PTV stations broadcasting cultural and entertainment-oriented programming. This situation indicated that ITV was losing the frequencies it had fought so hard to acquire. Whether ITV would be

available for school children was under the control of the PTV station program directors.

Public Broadcasting Act

The Carnegie Commission reported in January, 1967, and in March a bill was submitted to Congress which was eventually signed into law as the Public Broadcasting Act by President Johnson on November 7, 1967. However, the law failed to follow the Commission's crucial recommendation to authorize long-term federal financing for the Corporation. The Carnegie Commission's excise tax proposal was replaced by a 1 year funding provision with funding for subsequent years to be authorized by Congress. This decision would hinder public broadcasting to the present making it vulnerable to the politics of the administration in power. Thus, ETV operators lost what they once had: a national broadcast operation independent of government influence.

Facilities Construction Provision

Title I of the Public Broadcasting Act extended for 3 years, through 1970, the Educational Television Facilities Act of 1962. This Act authorized mainly for construction of ETV stations appropriations of \$10.5 million in 1968, \$12.5 million in 1969, and \$15 million in 1970, tripling amounts apportioned to that date.

Title I of this act also specified that no more than 8 1/2% of annual appropriations could be used for grants in any one state, replacing the existing ceiling of \$1 million per state. This increased the maximum federal grant to 75% of the cost of a project which superseded the existing law allowing a 50% grant plus 25% of the cost of an existing facility. A result was elimination of a provision that no more than 15% of a grant could be used for equipment to connect 2 or more stations (Congress and the Nation, 1965-68).

The Corporation for Public Broadcasting

Title II of the Public Broadcasting Act established the Corporation for Public Broadcasting (CPB) as a nonprofit educational broadcasting corporation. The CPB subsequently became the chief source of federal ETV and ITV funding.

The conservative coalition of Republicans and Southern Democrats tried to stop the establishment of the Corporation, preferring instead to distribute \$5 million to each existing ETV station. This title of the Act was controversial both because of the possibility that the corporation's activities might be influenced by political pressures and because there might be insufficient control mechanisms over its programming. Thus, the overall result was a weakly designed corporation.

Those who did participate in the debate over the bill, as during that over the 1962 all-channel act, took that route least threatening to the status-quo of broadcasting. By appropriating a modest initial fund for the CPB and not resolving the issue of permanent financing, House and Senate members did not create a very powerful rival to the established networks and stations of the private sector. (Schmid, 1971, p. 446)

The CPB is divided into 4 departments: Station Interconnection, Information, Grants and Contracts, and Planning and Policy. It is run by a board of 15 directors appointed by the President and confirmed by the Senate. No more than 8 directors may be from the same political party. Terms are for 6 years and directors are limited to 2 consecutive terms with different starting dates (Macy, 1971).

Generally, the CPB's activities include assisting new stations, obtaining grants, funding program production, and conducting research and training projects. The Congressional Declaration of Policy for the establishment of the CPB referred to ITV in Section 396 of the Act:

The Congress hereby finds and declares--(1) that it is in the public interest to encourage the growth and development of noncommercial educational radio and television broadcasting, including the use of such media for instructional purposes. (Public Broadcasting Act of 1967, 1967, pp. 368-369)

However, the Act did not emphasize ITV but instead programming which would be responsive to local interests. The Act also sought noncommercial television service of general interest:

It furthers the general welfare to encourage noncommercial educational radio and television broadcast programming which will be responsive to the interests of people in particular localities and throughout the United States, and which will constitute an expression of diversity and excellence; and it is necessary and appropriate for the Federal Government to complement, assist, and support a national policy that will most effectively make noncommercial educational radio and television service available to all the citizens of the United States. (Public Broadcasting Act of 1967, 1967, pp. 368-369)

The Act authorized the CPB to facilitate the full development of educational broadcasting in which programs of high quality obtained from diverse sources would be made available to noncommercial educational television stations--the Corporation was to assist in the establishment and development of one or more systems of interconnection to be used for the distribution of noncommercial television programs (Public Broadcasting Act of 1967, 1967).

According to the CPB goals and objectives instructional television is a high priority. The CPB should "provide direct support to the development, acquisition, production, and promotion of elementary and secondary school programming" (CPB, 1983, p. 7).

Prohibited from owning or operating a network service the CPB created and funded the Public Broadcasting Service (PBS). The CPB reviews for PBS the budget and staffing needs in the funding of projects related to the organization's goals. Managing network interconnections and program schedules the PBS board consists mainly of elected station managers with representatives from the general public and television production agencies. In 1983 PBS membership represented 52 colleges, 23 state authorities, 15 municipalities, and 69 nonprofit civic organizations operating 300 stations (Koughan, 1983). PBS ITV operations will be discussed in depth in Chapter IX.

Instructional Broadcasting Provision

Title III of the Public Broadcasting Act authorized \$500,000 to study what federal aid should be provided for educational media:

The Secretary of Health, Education, and Welfare is authorized to conduct, directly or by contract, and in consultation with other interested Federal agencies, a comprehensive study of instructional television and radio (including broadcast, closed circuit, community antenna television, and instructional television fixed services and two-way communication of data links and computers) and their relationship to educational radio and television and the form that aid should take, and which may aid communities, institutions, or agencies in determining whether and to what extent such activities should be used. (Public Broadcasting Act of 1967, 1967, p. 373)

Summary

By the mid-1960s enthusiasm for instructional and educational television had begun to wane. The Carnegie Commission was asked to study possible future developments for educational, noncommercial stations focusing their efforts on the service to the general public by locally operated stations. The Commission's recommendations significantly influenced the Public Broadcasting Act setting the agenda for noncommercial stations operating in the frequencies previously allocated for educational use.

The Public Broadcasting Act shifted the programming agenda established by the Federal Communications Commission in their Sixth Report and Order for noncommercial, educational television stations away from instructional and educational television toward "public" television, meaning cultural, informational, and entertainment programming with mass audience appeal. The Act established the Corporation for Public Broadcasting to fund noncommercial operations. Congress and the CPB considered K-12 ITV a high priority. Congress ensured that the CPB would become a major financier of ITV programming.

CHAPTER VIII
INSTRUCTIONAL TELEVISION LEGISLATION 1972 TO PRESENT

Stations with close ties to elementary and secondary education produced the majority of the ITV series through the 1970s. This programming was funded under federal grants, state department of education contracts, directly by the Corporation for Public Broadcasting or the U.S. Department of Education, and by business corporations and foundations with a commitment to K-12 education.

Intra-state consortium production encouraged the ITV industry to choose fewer but higher quality ITV programs with more resources invested in their production and guaranteed financial commitments by the participant ETV stations and their schools.

Before analyzing federal legislation as it affected ETV stations and their production and distribution of ITV programming the impact of federal legislation on the use and sponsorship of instructional television by educational institutions will be discussed.

Education Legislation

Federal participation in ITV during the early-1970s originated in the progressive-1960s. Years after passage

of ITV legislation Congress was still working on its implementation. The Childrens Television Workshop ("Sesame Street") emerged as the prime recipient of federal monies for ITV from the late-1960s through the 1970s with funds from the Elementary and Secondary Education Act and the Emergency School Aid Act. "Sesame Street" is directed at preschool and kindergarten teachers and is the most popular educational television series broadcast by ETV stations (see Chapter IX). ETV station operators, to the present, cite "Sesame Street" as evidence of their moral contribution to instructional television.

By the early-1980s diminishing federal interest in ITV resulted in the Omnibus Act that marked the end of an era of direct federal involvement in ITV usage by educational institutions.

Emergency School Aid Act

The legislation establishing interracial themes within federally funded ITV programs passed in 1972 as Title VII of the Education Amendments to the Elementary and Secondary Education Act, called the Emergency School Aid Act (ESAA). ESAA legislation influenced television production goals throughout the late-1960s and into the 1980s. In racial matters ITV programs sought to feature in television different races working harmoniously. ESAA

became the dominant source for federal ITV funding through the 1970s.

For ITV one important goal of this legislation was the "elimination of minority group segregation and discrimination among students and faculty in elementary and secondary schools" (Education Amendments of 1972, 1972, p. 334). Of relevance to ITV was Section 707 provisions for instructional materials and educational programs designed to improve racial harmony through

the development and use of new curricula and instructional methods, practices, and techniques (and the acquisition of instructional materials relating thereto) to support a program of instruction for children from all racial, ethnic, and economic backgrounds, including instruction in the language and culture heritage of minority groups; innovative interracial educational programs or projects involving the joint participation of minority group children and other children attending different schools, including extracurricular activities and cooperative exchanges or other arrangements between schools within the same or different school districts. (Education Amendments of 1972, 1972, p. 365)

ESAA section 711 became known as the ESAA-TV program. ESAA-TV had its beginnings in legislation introduced by Senator Walter Mondale in 1971. During the hearings Senator Mondale and several witnesses expressed their belief that television could help children mature without prejudice and could provide quality education. As evidence they cited "Sesame Street," which research demonstrated was having a positive effect on children's

cognitive and social learning. In his speech before Congress Senator Mondale stated:

If we want our children to grow up without the prejudice that has stained so many of our generation, and we want the educational achievement of our children to be as great as possible, then why have we ignored the inexpensive chance to reach children over television in their preschool years? The habit of viewing the television set is well established, and the high cost of hardware, and the cost of television receivers in well over 95 percent of all homes in the country, has already been met by the voluntary purchase of television sets by individual citizens. All that is needed is the software, the programming. (Nelson, 1980, p. 2)

The ESAA-TV program set forth guidelines for contracting with ETV/ITV producers, for the dissemination and transmission of the programming, and for the participation of minorities in the ETV/ITV process.

The Assistant Secretary shall carry out a program of making grants to, or contracts with, not more than ten public or private nonprofit agencies, institutions, or organizations with the capability of providing expertise in the development of television programming, in sufficient number to assure diversity, to pay the cost of development and production of integrated children's television programs of cognitive and effective educational value. Television programs developed in whole or in part with assistance provided under this title shall be made reasonably available for transmission, free of charge, and shall not be transmitted under commercial sponsorship. The Assistant Secretary may approve an application under this section only if he determines that the applicant--(A) will employ members of minority groups in responsible positions in development, production, and administrative staffs; (B) will use modern television techniques of research and production; and

(C) has adopted effective procedures for evaluating education and other change achieved by children viewing the program. (Education Amendments of 1972, 1972, p. 366)

To draw applicants for ESAA-TV funds, announcements would be sent to all public television station licensees, all superintendents of schools, a number of public and private nonprofit organizations, and the U.S. Office of Education regional commissioners. The announcements specified what categories of program content were open for proposals and what materials were to be included in the submission. To qualify applicants needed to submit a copy of their charter of incorporation or other documents as proof of nonprofit status and indicate in what way they had access to a production facility. Applicants had to have an advisory committee with a racial composition similar to that expected to be found in the program's audience, with representatives from 5 civic organizations, and meet for consultation at least 4 times a year (Mielke, 1975).

Education Amendments to ESEA of 1974

The Education Amendments of 1974 invoked substantial changes in sections of both the Elementary and Secondary Education Act and the National Defense Education Act pertinent to instructional television. The changes occurred as the Republican party attempted to

substitute block grants to the states for the categorical grants including those pertaining to ITV.

Instructional resources. Title IV of the

Education Amendments of 1974, "Libraries, Learning Resources, Educational Innovation, and Support," consolidated into a library and instructional resources program 3 categorical education grants: the school library program (ESEA Title II), the equipment program (NDEA Title III) (under which the schools purchased television reception equipment), and the guidance and counseling program (ESEA Title III). The innovation and support consolidation blended those sections of the ESEA referencing educational innovation (with ITV as an innovation) and included state ITV network activities of the state departments of education.

Title IV consolidated into the "Special Projects Consolidation" the Cooperative Research Act programs (e.g., "Sesame Street") and 7 other categorical programs: (1) metric conversion education, (2) education of gifted and talented children, (3) community schools, (4) career education, (5) consumer education, (6) women's equity education, and (7) arts education.

Funds for the purchase of instructional television equipment by the state departments of education now come under Part B of Title IV, "Libraries and Learning

Resources Program," which provided for grants to the states

for the acquisition of instructional equipment (including laboratory and other special equipment, including audio-visual materials and equipment suitable for use in providing education in academic subjects) for use by children and teachers in elementary and secondary schools, and for minor remodeling of laboratory or other space used by such schools for such equipment. (Education Amendments of 1974, 1974, p. 542)

Part C of Title IV, "Educational Innovation and Support," authorized grants for model or exemplary programs. Unlike prior legislation the title made no reference to the specific types of programs such as instructional television. However, educational television and radio were mentioned briefly in section 432 of Title IV which reaffirmed the involvement in ITV planning and programming of persons representative of the areas to be served (Education Amendments of 1974, 1974).

Reading improvement. Title VII of the Education Amendments of 1974 as the "National Reading Improvement Program" authorized \$30 million in 1975, \$82 million in 1976, \$88 million in 1977, and \$93 million in 1978 for a new reading improvement assistance program for the states. This title further authorized the commissioner of education to accentuate funds to state and local pre-elementary, elementary, and secondary programs dealing with reading difficulties; required each state or school district receiving a grant to prepare a

comprehensive reading improvement plan which included diagnostic testing, teacher training programs, parent participation and periodic testing and evaluation; and authorized \$3 million in fiscal 1975 for reading instruction on public television (Congress and the Nation, 1973-76).

Several instructional television reading series were developed under this title. As a design requirement, Part 3 of Section 701 Title VII stipulated that such programming should "develop a means by which measurable objectives for reading programs can be established and progress toward such objectives assessed" (Education Amendments of 1974, 1974, p. 588).

Instructional television reading programs have always been among those ITV programs most demanded by elementary teachers.

Education Amendments of 1978

The Education Amendments of 1978 established a new Title II and a new Title VI for the Elementary and Secondary Education Act of 1965. Section 207 of Title II, "Basic Skills Improvement," encouraged the use of technology in basic skills instruction. Section 611 of Title VI, "Educational Television and Radio," is essentially unchanged from Section 711 of ESAA-TV, except for the adding of radio and a modified funding procedure.

Innovations of Section 207 of Title II encouraged technological improvements in television and other technologies for instruction in reading, mathematics, and written and oral communications. Furthermore, under this section projects funded were to be designed to prepare teachers and programs capable of utilizing any new technology. Activities authorized included

the development and acquisition of educational programming, including audio and video materials distributed through broadcast, cable, tape, film, cassettes, or other means that provide instruction in basic skills in an effective manner; the development and acquisition of instructional materials that supplement educational programming to improve its effectiveness in the school, the home, and other learning environments; the development and acquisition of materials to assist teachers in relating such programming, or similar public or commercial programs of educational value, to instruction in the classroom; the training of teachers, administrators, and other instructional personnel in the use of educational technology; assistance to teachers, administrators, and other instructional personnel for experimentation with new technological approaches to instruction; and distribution of information about, and promotion of the use of, such programming and technology in the classroom and other learning environments. (Education Amendments of 1978, 1978, pp. 2203-2204)

Omnibus Budget Reconciliation Act of 1981

The Omnibus Act consolidated categorical grants into block grants, shifted more responsibilities for education from the federal government to the states, and cut back in federal funding for education. Along with

other categorical grants the Omnibus Act ended federal legislation specifically designed for ITV in the nation's schools.

Efforts toward such consolidations started during the Nixon administration. The 1973 and 1974 ESEA Amendments became the means for a prolonged but unsuccessful attempt to substitute block grants to the states for the direct categorical grants to the localities. The Republicans contended that state education departments were better able to determine the needs of local school children than was the U.S. Office of Education (Congress and the Nation, 1973-76). Opponents cited staff limitations of state departments of education and their tendency to discriminate against urban areas.

Seven years later the consolidation efforts gained momentum under the Reagan administration. President Reagan proposed to consolidate more than 50 education programs into 2 block grants: one to states for improving state and local school programs and to serve children in state institutions, and one to local education agencies. At the outset his proposals met with only limited success but momentum was building.

Rallied against this movement were civil rights groups, parents of handicapped children, groups representing children and the poor, and key members of

Congress. Many of these groups had fought for years to get existing education programs enacted on a federal level precisely because states and localities were unable or unwilling to provide the needed services. These groups feared that without federal safeguards supporters of the various programs would struggle with funding based more on politics than need.

Under the Reagan administration in 1981 consolidation began in earnest. From 1982 through 1987 ESEA, NDEA, and ESAA programs in basic skills, special projects, educational improvement, state leadership, emergency school aid, community schools, and additional programs authorized by Titles II-VI, VIII, and IX of the Education Amendments to ESEA were to be consolidated into block grants to the states. Title I programs of compensatory education for economically disadvantaged children and programs of aid for education of the handicapped, though not included, were grouped by the Omnibus Act then underwent a budget cut of 25%.

Programs consolidated under the Omnibus Act into block grants can be divided into 3 parts: (1) basic skills--reading, writing, and math; (2) educational improvement and support services such as libraries, instructional equipment, guidance and counseling, and programs addressing the problems of minority children; and (3) special projects such as metric, arts, consumer

and environmental education, gifted and talented children, ethnic heritage studies, and teacher training (Congressional Quarterly, 1981, p. 912). This changeover ended ITV programs which had been funded through NDEA, ESEA, and ESAA-TV. While many states have increased funding capabilities for public schools, because of a relatively weak political position little of the new state money has reached ITV.

Station Legislation

Legislation affecting the educational noncommercial broadcaster as it applies to those active in ITV will now be traced from the Public Broadcasting Act to the present. Despite the trend away from ITV after the passage of the Public Broadcasting Act, the networking operations and interconnection systems established by the Corporation for Public Broadcasting and enacted by the Public Broadcasting Service significantly extended the distribution capabilities of those surviving ETV stations offering ITV.

Public Broadcasting Financing Act of 1975

This act contained provisions for educational television program production, distribution, and dissemination, with specific references to nonbroadcast communication technologies used for educational purposes,

and allowed federal funds to be used for all matters related to the production and national distribution of educational programming.

Funds distributed pursuant to this subsection may be used at the discretion of stations for purposes related to the provision of educational television and radio programming, including but not limited to the following: producing, acquiring, broadcasting, or otherwise disseminating educational television or radio programs; producing national or regional program distribution services that make educational television or radio programs available for broadcast or other dissemination at times chosen by stations; acquiring, replacing, and maintaining facilities, and real property used with facilities, for the production, broadcast, or other dissemination of educational television and radio programs; developing and using nonbroadcast communication technologies for educational television or radio programming purposes. (Public Broadcasting Financing Act of 1975, 1975, p. 1100)

This legislation set a precedent in allowing federal funds to be used by ETV stations for program production. ETV management had historically declined any government involvement in programming.

Educational Broadcasting Facilities and

Telecommunications Demonstration Act of 1976

This Act reflected congressional intent to promote the development of nonbroadcast telecommunications facilities and services for the transmission and distribution of health, education, and public or social service information (Educational Broadcasting Facilities

and Telecommunications Demonstration Act of 1976, 1976). With federal funds, public and nonprofit agencies, organizations, and institutions developed means to demonstrate innovative uses of nonbroadcast telecommunications equipment and facilities. This illustrates the willingness of Congress to allow ETV station sponsorship, with federal funds, of experimentation in the new technologies--many of which hold ITV significance for the schools.

For funding, the ETV station applicant had to demonstrate that the project would be innovative in the use of nonbroadcast telecommunications equipment mainly for the transmission, distribution, and delivery of health, education, public, or social service information (Educational Broadcasting Facilities and Telecommunications Demonstration Act of 1976, 1976, p. 685).

Public Telecommunications Financing Act of 1978

Title I of this Act transferred educational broadcasting facilities funding from the Department of Health, Education, and Welfare (HEW) where it had resided since the ETV Act of 1962 to the National Telecommunications and Information Administration (NTIA) under its Public Telecommunications Facilities Program (PTFP). NTIA was established by Executive Order 12046 on March 27, 1978, under the Commerce Department, and

combined the resources of the Office of Telecommunication of that Department, with the Telecommunications Policy branch of the Executive Office of the President. The responsibility of these converged departments is to make policies in support of the development and growth of telecommunication, information, and related industries; to further the efficient development and use of telecommunications and information services; to provide policy and management for federal use of the electromagnetic spectrum; and to provide telecommunications facilities grants for public service users (Department of Commerce, 1984-85).

This Act is significant in that it eliminates references to educational uses of the frequencies while it places funding under an agency with no responsibilities for education. While the Public Broadcasting Act created public broadcasting stations (PTV) instead of educational television (ETV) stations signifying congressional intention that these noncommercial frequencies secure income from the public as well as from corporations, foundations, and government agencies, it was not until the Public Telecommunications Financing Act of 1978 that references to the use of the medium for educational or instructional purposes were eliminated. The medium could now be considered truly "public," as opposed to "educational," with program

directors given considerable discretion regarding the broadcast of ITV.

Public Broadcasting Amendments Act of 1981

The Public Broadcasting Amendments Act of 1981 is Chapter 1 on Public Broadcasting under Subtitle B of the Communications category of Title XII having to do with Consumer Product Safety and Communications in the Omnibus Budget Reconciliation Act of 1981.

Contending that taxpayers should not be required to subsidize the "entertainment" of others, President Reagan wanted to eliminate federal funding of public broadcasts. There was also criticism of PTV on grounds that it failed to air sufficient instructional and educational programming. Though rejecting Reagan's proposal as denying the nation a source of cultural enrichment Congress reduced PTV funding by 40% and reduced the CPB board to 10 members. To make up the loss Congress authorized PTV broadcasters to seek funds by such means as advertising.

FCC Authorization Act of 1983

Federal cutbacks nearly bankrupted public television. In an unusual gesture, through Congress approval in 1983, the Federal Communications Commission authorized that some funds be released for public

broadcasting (FCC Authorization Act of 1983, 1983). The legislation set funding for the CPB at \$145 million in 1984, \$153 million in 1985, and \$162 million in 1986. This helped overcome the financial effects of the Public Broadcasting Amendments Act of 1981 which planned to reduce CPB funding from \$220 million in 1983 to \$130 million in 1985-86 (Congressional Quarterly, 1981).

Summary

Federal legislation through the 1970s designated subject matter for federal financial support. ESAA funded ITV programming with the objective of promoting racial harmony. The Education Amendments of 1974 put programming stress on reading improvement.

The trend throughout the late-1970s was toward the consolidation of education grants. These consolidations grouped areas eligible for federal funding into broad, general classifications and eliminated references to specific agenda such as instructional television. The Omnibus Act was the final consolidation and placed existing education programs into 3 block grant categories while shifting more responsibilities for education to the states with an overall federal funding reduction of 25%.

Technological accomplishments of the Public Broadcasting Service during the 1970s expanded the capabilities of the stations for the delivery of

instructional programming. However, by the early-1980s the CPB's struggle for financial survival affected the Public Broadcasting Service and ETV stations.

CHAPTER IX

CASE STUDIES: ITV PROGRAMMING 1969 TO PRESENT

Federal, state, and private agencies actively funded ITV throughout the 1960s and 1970s causing dramatic improvements in program quality. The most influential programming of this era was produced by the state ITV consortiums organized and managed by the Agency for Instructional Television. By the mid-1980s the Omnibus Act drastically reduced ITV funding. Moreover, by this time period state media budgets were being allocated for computers rather than ITV.

The format of instructional television programming changed dramatically in the 1970s. Initially ITV programs featured an instructor delivering a classroom lecture and were designed to be used as the primary source of instruction for the subject covered (see Chapters I and III). The better efforts integrated laboratory experiments and external world experiences into the lectures. Beginning in the 1970s, ITV programming assumed a more general, subject overview format more appealing to mass audiences. With budgets larger than the early ITV programs this new format stressed entertaining presentations and utilized professional talent, special effects, costumes, music,

and comedy. These trends were in response to increased knowledge of the potential of television for instruction and the resentment of teachers of any effort to replace them as the primary instruction.

ITV series for analysis are categorized by subject matter and production date. The majority of these shows were produced in the mid-1970s to early-1980s reflecting the influence of state and federal ITV funding. Production facts and program synopsis for this section are drawn from the catalogs of the national ITV libraries (AIT, 1984; GPN, 1984). Descriptions of the programs are from personal observation. The analysis will start with the series which received most of the federal ITV budget from the late-1960s into the 1970s and was influential in establishing commercial television production techniques as appropriate for ITV.

"Sesame Street"

One of the areas designated by Congress for ITV funding was early education programming for economically disadvantaged children. While seeking to meet the educational needs of the children, legislators wanted to project through appropriate ITV casting an atmosphere of racial harmony. The Childrens Television Workshop (CTW) was created in response to this mandate.

"Sesame Street" began as the first production of CTW. It is the most popular preschool and kindergarten ITV series ever developed and is broadcast extensively by ETV stations for both school and home use. Many ITV producers were inspired by the instructional design of this series.

CTW was started by Joan Cooney, a participant in a Carnegie Corporation study which suggested that with proper programming television could be instrumental at reaching children of poverty before they reached school age. Initial funding of \$8 million was granted for this purpose by the U.S. Office of Education, the Ford Foundation, the Carnegie Foundation, and various private sources (Marland, 1971).

Originally part of National Educational Television, CTW is nonprofit. From 1969 through the early-1970s CTW became the prime recipient of federal monies for ITV programming through the Cooperative Research Act and the ESAA-TV program (Mielke, 1975).

Compared to its ITV predecessors the productions are expensive (\$35,000 to \$50,000 per hour). The format is entertaining and the characters--human and puppet--are appealing. The instructional presentations are low-key and freely interspersed with skits, vignettes, and feature shorts.

The curriculum of Sesame Street does not follow the typical format of proceeding from the elementary to the complex. Instead, each segment is directed at particular goals relating to a curriculum which permeates the series (Mielke, 1975). Each program contains many short segments most of which are connected to an instructional objective. The designers believed that educational programming built within an entertaining format and which uses the fast-paced scene developments found in commercial television could retain the attention of a young audience.

In a typical program the featured characters, as human, puppet, or cartoon animation, become involved in number drills such as counting 10 horses, 9 runners, 8 insects, or spelling drills focused on a memorization of the alphabet such as hen, hair, horse. The presentations are designed to instruct the audience in (1) symbolic representation like letters, numbers, geometric forms, cognitive processes like perceptual discrimination, relational concepts, classification, ordering, reasoning; (2) problem solving like problem sensitivity, inferences and causality, generating and evaluating explanations and solutions; and (3) about the child and his surrounding environment like self, social units, social interaction, man-made environment, natural environment (Mielke, 1975).

There have been extensive evaluations of Sesame Street. Evaluations have pronounced the series as particularly beneficial to disadvantaged students. Per pupil cost has been estimated at about \$1.30 per year (Marland, 1971).

Language Arts

"The Electric Company"

This series was produced in 1972 for 2nd graders in the lower half of their reading class by the CTW. With 6 million children as regular viewers, 40% watching from the classroom, the "Electric Company" is overall the most popular ITV series for children. The series is credited with improving national reading achievement scores (Mielke, 1975).

The CTW production principles of an entertaining and segmented format are applied to this series. In terms of overall production quality, instructional development, and aesthetic design Sesame Street and The Electric Company are also similar. However, The Electric Company, being designed for an older audience, features a more advanced format.

In a typical program a word is treated as a group of letters, then as a symbol in a larger word, and finally as a part of a phrase or sentence. For example, a progression developing the sound "SH" starts with the

appearance of the letters SH, proceeds to animated graphics of two human mouths pronouncing words beginning with SH, with the first mouth making the "SH" sound, and the second completing the word such as shave or shower, with the words appearing on the screen in printed form. In the following scene a villainous animation steals the first letter of the above words and changes them into other words. Finally, an animation called "Letterman" appears to change them back to normal.

"The Letter People"

"The Letter People" was produced in 1975 for grades 2 through 4 by KETC, St. Louis, Missouri. The series focuses on grammar development. Muppets are used as the main characters. The series is reported to be popular with teachers and is supported by a comprehensive teacher's guide and study materials.

In a typical program a female muppet is transported by her fairy godmother to a rambunctious discotheque in a spoof of "Cinderella" where a disc jockey entertains an extremely wild crowd. The learning exercise is developed as part of a quiz show taking place inside the disco. The host of the show introduces, for instance, the "ing" sound at which point the audience finds the missing word ("digging," "rocking," etc.). The rules for applying "ing" are given humorously and in song lyrics. Other

examples include using a record album "top hits" countdown format to introduce words ending in "ing" and using the rock group "The Lettergirls" to sing rules about the correct use of the double consonant before "ing."

"Wordsmith"

This series was produced in 1975 at KLCS-TV, Los Angeles, by the Agency for Instructional Television for grades 5 to 7. The series host Bob Smith introduces words and their derivatives through the use of short features, graphics, and humorous character sketches. The presentation is humorous and friendly. Each program of the series focuses on a different theme such as "food," "size," "communication," etc.

The episode "Relatives" begins with the studio host using graphics and visual displays to develop the word "mater" and progresses from "mater," to "mother," to "matrimony," and finally to "motherhood." Video inserts of ancient Greece are used as background art while developing the history of the word. The scenes then switch to humorous, animated rhymes which reinforce the instruction. With the instruction for that word complete, the audience is returned to the studio where the host chooses a ball from a cage on which is written the next word for study. The process is repeated several

times in each show. The format seems to be an entertaining way to memorize word meanings. Apparently, understanding the roots, history, and alterations of common words increases abilities in the usage of those words in the external world.

"I Want to Read"

This series was produced in 1975 for grades 1 and 2 by the Greater Los Angeles Regional Educational Television Advisory Council (RETAC), Downey, California, under a grant from ESEA Title III--the Reading Development Project. The series uses literature, poetry, and music as the basis of the reading lessons. The literary and linguistic patterns identified and used in the lessons help the child use his or her oral English in the reading process. Children hear the melody of the language and begin to develop an understanding of how stories are put together and the relation of stories to reading. The goal of the series is for the audience to perceive reading as a process through which experiences, ideas, feelings, and imagination are communicated.

The program "Stories in the News" begins with a man and a woman in a newsroom discussing in melody what they read in the newspaper. As they read they stir questions, at which point the scenes change to live footage of that story. For instance, a host would say "I'm reading about

_____ " while the scene changes to a house on fire and the pupils choose their answer. In another technique to stimulate interpretive skills the hosts read out headlines but instead of showing live footage of the event graphics of possible subjects roll along the side of the screen with the audience to choose the best one.

"Reading for a Reason"

This series was produced in 1983 for grades 7 and 8 by the University of Wisconsin's Green Bay Center for the Wisconsin Educational Television Network. The series follows a cast of 8 junior high school students as they contend with the prose of their textbooks, in the process teaching reading skills to 7th and 8th graders. This award winning series expertly uses production aesthetics and role models.

The program "Everything Means Something" begins in a dream world with the cast trying to ascertain their location by examining details of their surroundings. One of the girls discusses the environment with reference to a book she was reading the previous night. This leads to a discussion of the author's purpose in writing that book and how everything has a meaning. The program narrator then discusses methods of finding clues when reading to release them from their dream world.

Eventually, the clue process is applied to a history text with which one of the students is experiencing difficulty. The group works out 5 kinds of clues for discovering textbook meanings such as previewing. Significant words are then discussed, like however or then, as means for discovering the main ideas in paragraphs. By these means the actors ascertain their location as a basis for the narrator explaining the mental process of clue-finding.

"Read All About It"

This series was produced in 1979 for grades 5 and 6 by TVOntario, Toronto. The production quality is excellent. The story features a small cast of likeable children as good role models and a few corrupt adults.

The story "Strange Discoveries" and its companion "The State Secret" center on "The Herbertville Chronicle," a newspaper for children, and a talking computer who is a grammar whiz. Notes, articles, and references are underlined and reorganized by the computer's screen in view of the audience. The instruction and story are skillfully integrated to draw from the newspaper knowledge which becomes the basis for escapades by the children.

In one episode a company delivers the children a blender in hopes of free advertising in their newspaper.

Through careful analysis they discover fraud in this advertisement which the computer then rewords accurately. This exercise is the basis for an explanation showing differences between opinion and fact. From the series viewers come to understand the impact of the printed word.

"Reading Rainbow"

This series was produced in 1983 for ages 6 to 9 by Great Plains National, Lincoln, Nebraska, and WNED, Buffalo, New York, with funding from the Corporation for Public Broadcasting and the Kellogg Company. It is designed to encourage young beginning readers to continue their reading during the summer vacation. Each program is a magazine format adventure featuring a children's book and including activities relating to the book's theme.

This lively, colorful series seeks to illustrate through reading that you can travel anywhere. The productions are of high quality, often set in such theme-related places as Dinosaur National Park or the New England Aquarium and include animation. Accompanying the series is an activity magazine called the Reading Rainbow Gazette with games, puzzles, and photographs from each program as well as a list of the books discussed.

The shows start with the theme song "I Can be Anything" (through reading) and is followed by the host, Levar Burton, describing a book in the appropriate setting. To further involve the audience in the story scenes are alternated between footage of the story and scenes of the host and his "gang" talking about the books they have read.

Art and Music

"The Draw Man"

"The Draw Man" was produced in 1975 for grades 3 to 8 by KOKH-TV, Oklahoma City Public Schools. In this series the camera focuses on the host's sketch pad as he explains the process of drawing, utilizing a variety of subjects. Each program of the series is devoted to a different technique or model. Programs have been devoted to the technical aspects of drawing faces, figures, basic shapes, and silhouettes as well as cars, cartoons, dinosaurs, horses, and birds. The series host encourages the audience to become involved in drawing and to develop their own style.

In the program "Cars" the artist, starting with a block and referencing technique, slowly forms the rectangular block into a sports car. The level of presentation anticipates that the typical reader will not be skilled at drawing.

"Arts Express"

This series was produced in 1982 for grades 2 through 5 by Kentucky Educational Television with financial assistance from the Corporation for Public Broadcasting. The production quality is good and the concept unique. The story unfolds as a young girl, alone in a museum with a talking Victrola, is instructed in the history of the arts as moving pictures appear on the Victrola's horn. The series is designed to introduce children to the arts in their environment and to facilitate an awareness and use of the arts as a means of communication.

The shows use animation, location footage, and dramatic sequences to explore the origination of artistic ideas and how they are created and conveyed. For each art form its elements and principles are depicted as contributing to the finished product. Programs cover topic areas such as the communication process, cultures and customs, fantasies, dreams and wishes, light, the environment, shape and form, and space.

The segment "Rhythm" opens with the Victrola showing actions with rhythm, like windshield wipers or a galloping horse. Inspired by the motion, the host accompanied by the Victrola, systematically develops each sound of a horn section. The Victrola then shows pictures of the song's formation with graphic

illustrations of notes, tempo, and beat rhythms. The Victrola finally demonstrates how different types of music illustrate different emotions in the listener.

"Arts Alive"

This series was developed in 1984 for grades 9 to 12 through the consortium of state and provincial education agencies organized and managed by the Agency for Instructional Television. Additional funding was provided by the Exxon Education Foundation and the Capezio Dance Foundation. The series is designed to encourage viewers to participate in the arts and to help them understand how art functions in society. The programs deal with the visual arts, the role of the arts in life, and with the value of the arts to the individual.

The program "Creating Music" depicts the composing of music and how musical elements contribute to the total composition. The first scene is of a music class as the narrator discusses the elements of rhythm, harmony, and melody. The next few scenes are of performers practicing popular music and recording in a studio. A musician speaks of the importance of rhythm and then illustrates the principles by programming different patterns while a computer monitor displays the visual aspects of harmony and melody translated into graphic form.

Health"Inside Out"

This series was produced in 1973 for grades 3 to 6 by the Kentucky Authority for ETV, Lexington; KETC-TV, St. Louis; WVIZ-TV, Cleveland; Educational Film Center, North Springfield, Virginia; and TVOntario, Toronto, for the state and provincial education agency consortium organized and managed by the Agency for Instructional Television. Among other awards, this series received an Emmy for outstanding children's programming at the 1974 National Academy of Television Arts and Sciences ceremony. It is designed to help pupils' interpersonal communication skills.

The programs dealing with problems and emotions from the point of view of the child, cover such common topics as the neighborhood bully, the joker, responsibility, freedom, and sibling rivalry. The series recognizes that the way a person lives, the kinds of decisions a person makes, and how a person feels are of vital importance to a person's well-being.

The program "Strong Feelings" starts with a child having a nightmare. The following scenes alternate between children experiencing emotional situations such as a house of horrors, young lovers in the park, and a boy and his dog. A wacky professor uses graphs to

explain how muscles react to stress, how the heart beats faster when embarrassed, and other such physical responses to emotion.

"The Inside Story"

This series was produced in 1981 for grades 3 to 5 by the University of Wisconsin-Green Bay Telecommunications Center for the Wisconsin Educational Television Network with partial funding from the Agency for Instructional Television. The production quality is extremely good and unique! The host, Slim Goodbody, wears a suit which displays his insides while he sings and dances his way through models of body parts and systems.

The intent of the series is to convey an understanding of human biological functions and what children can do to keep themselves healthy. Studio scenes show the "Goodbody Kids" practicing principles of good health based on instructional material on the heart and blood, respiration, digestion, bones and muscles, the brain and nervous system, the senses, and the glands.

A show on the brain begins with a fast-paced studio demonstration on the brain accompanied by graphics and definitions. Children are then shown swimming, tasting, and smelling to illustrate the appropriate brain function for each activity. This is followed by a studio

dramatization of the nervous system with the host weaving in and out of a huge enlargement of human nerves dangling from the studio ceiling. The final illustration is of a brain cut in half to show its inner structure. As the host talks about a function the portion of the brain controlling that function lights up. The narrator tells of experiments in which body parts react to stimulation of certain portions of the brain.

"On The Level"

This series was produced in 1980 for grades 9 to 12 by the Educational Film Center, North Springfield, Virginia and TV Ontario, Toronto, through the resources of the state and provincial education agency consortium organized and managed by the Agency for Instructional Television. Additional funding came from the Corporation for Public Broadcasting, Exxon Corporation, the George Gund Foundation, General Mills Foundation, and Union Carbide.

The series is about the personal and social growth of secondary school students. Each program dramatizes a common teenage concern such as changing relationships with parents, self-understanding, conflict, the physical and emotional signals of stress and ways to handle it, the advantages and disadvantages of membership in the peer group, etc. The programs illustrate ways that

teachers and students can analyze and discuss personal feelings and experiences with no threats to their privacy.

The show "Daddy's Girl" takes place on a farm near a small town. The father is concerned about his daughter's increasing sexual awareness. Her boyfriend works for him and one day the father, after catching them in an embrace, fires the boyfriend and restricts his daughter. She runs away, but after a night at the bus depot, returns to find her father asleep on the couch. Discovering that he had been up all night worrying, she decides to work with him to overcome their problems with communication. The show is designed to encourage the audience to identify with the main characters.

Literature

"American Short Story" was produced by Phoenix Films for grades 7 through 12. Each program dramatizes a short story by one of America's renowned writers such as Ray Bradbury, Willa Cather, Carson McCullers, W.W. Jacobs, Stephen Crane, Edgar Lee Masters, and Kurt Vonnegut. The shows begin with the host explaining what a short story is, introducing the story to be viewed, and giving a background profile of the author.

Stephen Crane's "Three Miraculous Soldiers" is a story about a young southern woman whose home is in the

line of battle during the Civil War. Three wounded Confederate soldiers pursued by Yankee soldiers seek her help. At this point the presentation returns to the studio where the host analyzes the story's plot, gives additional background on the story, and gives some information about the characters. In this instance the host tells the viewers to watch carefully the young woman's conversion from a Yankee hater to a more open-minded person. The story then resumes to find the young woman hiding the Confederate soldiers just as the Yankee soldiers arrive. Although initially unfriendly she slowly begins to understand why the Yankees are fighting after they take a Confederate prisoner whom she helps in an escape during which a Yankee is wounded. In the process of helping the wounded man she begins to understand more about life.

Social Studies

"Bread & Butterflies"

This series was produced in 1974 for grades 4 to 6 by the Educational Film Center, North Springfield, Virginia; KETC-TV, St. Louis; UNIT Productions, Salt Lake City; WHRO-TV, Norfolk, Virginia; and the Georgia Department of Education through the resources of the state and provincial education agency consortium

organized and managed by the Agency for Instructional Television.

The series is designed to encourage students to exert control over their own career development by enabling them to explore a variety of work and career attitudes and options. A successful work attitude and the connection between school and the external world are stressed. Programs cover such topics as decision-making, self-clarification, life styles, worker interdependency, creating human dignity, and power and influence.

The show "Life Styles" was shot on a farm and in a neighboring small city. The first scenes are that of a father and son walking on their farm as the father explains the advantages and disadvantages of farming. In the next scenes they visit a welder in town who explains his duties and his feelings about his work. The father points out that in the factory work is a 9 to 5 job whereas for those who work for themselves, as in farming, free time is rapidly diminished. The remainder of the show is devoted to a band of country musicians telling about life on the road and to a mother telling about raising a family.

"American Legacy"

This series was produced in 1983 for grades 5 and 6 by KRMA-TV, Denver Public Schools in association with the

Agency for Instructional Television. The goal of the series is to aid students in understanding history, social studies, and geography through a blend of documentary, docu-drama, and magazine formats. Each program concentrates on significant locations, events, and personalities in a history of one region of the nation and the relationship of the region to the geography and economics of the contemporary world. While the programs follow the daily routines of some of the region's residents, narration brings out facts pertinent to what is being achieved. The series covers both institutional and geographic issues with documentaries on the national parks, cattle country, seaports and ships, the Tennessee Valley, and the midwestern farm states.

The show "Tidewater to Piedmont" is a fast-paced history of the region of the country known for its tobacco industry. The region's evolution from Jamestown, through the era of slavery and plantation farming, to the development of water power, the rise of cotton and the textile industry, and peanut farming is illustrated. The program tries for racial balance by citing the discoveries of black scientist George Washington Carver. The narrator concludes the program with a summary of the most important points.

"Across Cultures"

This series was produced in 1983 for grades 6 and 7 by Positive Image Productions and the Academy for Research, Instruction, and Educational Systems for the Wisconsin Educational Television Network and the Agency for Instructional Television.

Filmed on location, the programs follow the daily activities of families of the Tarahumara Indians of Mexico's Sierra Madre, the urban people of Osaka, Japan, and the Baoule village people of the Ivory Coast. The characters featured are children of the same age as those expected to be viewers. The goal of the series is to promote understanding of the effects of culture. The 3 cultures selected for study vary significantly in their environments, geography, wealth, technological complexity, and degree of global involvement.

The program "Cultural Change" examines all 3 cultures with respect to their life style, values, leadership, technology, medicine, and food. Each is shown as it is affected, or unaffected, by modern technological advances. For instance, the Tarahumara resist change so their culture remains relatively stable except in regard to modern medicine as compared to the Japanese full acceptance of technical advances. While the Baoule of Nigeria have a few Toyota trucks they have accepted little else of modern technology.

"Why in the World"

This is a current events series for grades 10 to 12 produced by WNET, New York, with financial assistance from the General Motors Corporation. These studio productions consist of a host, 1 or 2 guests, and a panel of students from Greater New York City High Schools engaged in a roundtable discussion. This is nearly the complete format.

The host defines the subject matter which prompts discussion among the students. The goal is to provide a link between current events and high school studies helping students understand the reasons behind news events. The program utilizes a variety of subjects such as vocational, technical, aesthetic, social, and scientific topics.

A typical program dealt with Vietnam. A permanently disabled veteran discussed his feelings of a personal sense of duty when called to service and his feelings during and after the war. Another program featured representatives of Indian tribes discussing life in a reservation and Indian relations with the United States government. In another show the President of New York University discussed federal government obligations to educate the young and the quality of education offered by American schools. This program was broadcast

immediately after the Reagan administration announced a reduction in federal student aid.

"Consumer Squad"

This series was produced for grades 4 to 9 by Maryland Instructional Television. The series goal is to inform students of consumers' rights and responsibilities in a technically advanced and materialistic society. Skills such as decision making, problem solving, and negotiating are emphasized. The program covers advertising, financial planning, money management, marketing techniques, consumer aids/comparison shopping, and energy management.

The show "Advertising" begins with a young woman entering a store to purchase a pair of advertised headphones. The salesman talks her into a more expensive pair claiming they were out of stock on the sale item. This incident prompts the "consumer squad" which informs on the corrupt practice. The manager gives the woman a refund and offers her the headphones at the advertised price. Back at the consumer squad's headquarters a computer provides an analysis of advertising techniques. Movies are used to illustrate advertising and sales techniques and their effects on human behavior.

Science"Eureka"

This series was produced in 1980 for grades 7 and 8 by TVOntario, Toronto. Physics instruction is expertly presented in 5-minute animated cartoon segments.

Comedian Billy Van gives an explanation of the physics concepts while cartoon characters and a variety of animated objects repetitively demonstrate those principles in action. Some of the topics include inertia, mass, speed, acceleration and gravity, the screw, the wheel, the pulley, atoms, electrons, conduction, heat, energy, and radiation.

A segment illustrated the application of kinetic energy to daily life by animating David slaying Goliath with the energy of a propelled rock, the energy principles achieved by a watermill, and the forces which balance a rock on a cliff. Illustrating the uses of an inclined plane, the program featured cartoon characters using a ramp to load barrels into a truck as equations for calculating load and resistance appeared on the screen.

"Terra Our World"

This series was produced in 1980 for grades 7 to 10 by Maryland Instructional Television. It is designed to make students aware of environmental issues. Interviews,

explanations, and on-site visits provide information about the scientific, aesthetic, social, and economic implications of environmental problems and their possible solutions. Hosted by veteran newswoman Connie Chung, the series has won two NAEB awards in 1980; the George Foster Peabody Award, 1980; Broadcast Media Award, 1980; SECA Award for Innovative Instructional Television Production, 1980; and a Red Ribbon at the American Film Festival, 1981.

Each program begins with an environmental issue. The host then provides an overview of the causes of the problem with reference to its future ramifications. Experts are consulted as location shots establish visual evidence. Topics covered include renewable and non-renewable resources, food in the environment, quality of life, and energy alternatives.

The issue of "Food in the Environment" is introduced by a narration on the food chain as it relates to energy. A microbiologist discusses food from his perspective and from the perspective of a plant, insect, or animal. Graphics of the food chain are displayed and followed by live footage of the destruction of farm land by pesticides and urbanization.

A Cal Worthington Dodge car advertisement starts the show "Non-Renewable Resources." A discussion follows pointing out how precious resources are wasted when a car

is purchased every 2 years, since cars are built to last 5 or more years. This is followed by scenes of strip mining, air pollution, and deforested land. The message is that as resources are depleted costs rise and the number of jobs available decreases. The program concludes with coverage of a recycling plant and a solar energy power plant as means to preserve resources.

"3-2-1 Contact"

This series was produced in 1980 for grades 3 to 6 by the Childrens Television Workshop with funding from the National Science Foundation, the U.S. Office of Education, United Technologies, and the Corporation for Public Broadcasting.

A variety of delivery formats convey scenic locations whenever appropriate. The hosts are friendly young people who, in their living room-like studio, introduce the topics while gaining attention with mischievous and humorous behavior.

The series goal is to (1) help children experience the joy of creativity and the satisfaction of scientific exploration, (2) help children become familiar with the scientific method and the social implication of scientific and technological achievements, and (3) help children to participate in the cooperative human endeavor of science and technology. The topics covered include

space, measurement, earth, electricity, flight, and communications.

In the program on atoms and molecules a young woman in a living room setting reads about molecules. This leads to a young man's explanation of the general principles of molecular action illustrated with a tea kettle. There are scenes of a racing motorcycle driver explaining the molecular action of the engine. In the studio the young man demonstrates molecular action this time illustrated by a popcorn popper. The program continues with the pilot of a soaring balloon explaining how hot air molecules pull the craft upward. For the conclusion animation and graphics summarize molecular theory.

"WhatAbout"

This series was produced in 1983 for grades 7 and 8 for the Skills Essential to Learning project of the state and provincial education agency consortium organized and managed by the Agency for Instructional Television. Series segments were filmed at Walt Disney World, the Smithsonian Institution, Maryland Instructional Television, and various research facilities at the University of Arizona.

"WhatAbout" encourages students' understanding of scientific inquiry while connecting science with

practical living and the solution of daily problems. The series illustrates the need for critical thinking abilities while noting the complex scientific equations which young people frequently encounter but rarely stop to notice for lack of insight into sound research procedures.

The show "Inferring in Science" progresses from fossil exploration in the desert to an analysis of past weather conditions using the rings from the cross section of a large tree. Graphs and charts assist the young participants as they learn how to choose relevant conclusions from observed evidence.

"Human Community"

Developed in 1983 for grades 6 to 10 by WHRO-TV, Norfolk, Virginia, with financial backing from the Commonwealth of Virginia and the Corporation for Public Broadcasting, this is an environmentally-oriented series covering such topics as present and future energy sources, use and storage of chemicals, and human manipulations of organisms and environment.

In the episode "Coal" the narrator at a coal mine explains the process by which coal is created as the walls of the caves are scrutinized for matter which decayed to form the coal. There follows a closeup of

processing equipment as the narrator explains each stage of coal processing.

Photographic techniques are used to compress a day into a 1-minute sequence to illustrate the workings of a coal yard. Figures and graphics on coal usage, world ownership of the resource, and consumption patterns are interspersed with the live coverage. This leads to analysis of a coal-fired power plant, noting its air pollution problems. A discussion of the energy demands of our type of society closes the presentation.

Mathematics and Economics

"Tax Whys"

The series "Tax Whys" was produced in 1979 by the United States Internal Revenue Service as part of their taxpayer education efforts. Developed in conjunction with the Joint Council on Education and produced for grades 9 to 12 by the Agency for Instructional Television, viewers observe young adults grappling with the principles of⁹ taxation.

They contend with the economics of and various reasons for taxation. The lessons show how taxes pay for the goods and services provided by the government and how total tax receipts can influence both the rate of inflation and unemployment statistics. The series includes 2 programs on the microeconomics of taxation, 2

on the macroeconomics of taxation, and 2 on the issue of equity in taxation.

The program "Understanding Taxes" begins with a few young adults starting their own business. One of the participant's father as a small businessman is illustrated as he makes investment decisions based on tax consequences. Tax exemptions and credits, tax on imported goods, payroll taxes, and sales taxes are used as examples and analyzed in depth.

"It Figures"

This series was produced in 1982 for grade 4 by Glenhill Productions, Ltd., Kettleby, Ontario; KOCE, Huntington Beach, California; Larry Wood Productions and KLVX, Las Vegas; Maryland Instructional Television; New Jersey Network; and the South Carolina Educational Television Network through the state and provincial education agency consortium organized and managed by the Agency for Instructional Television as part of the Skills Essential to Learning (SEL) project.

The series stresses problem solving based on mathematical solutions. The format features realistic, dramatic episodes in which pupils see students their own age using mathematics to think, reason, and solve problems both in and out of school. Their efforts are interspersed with animated fantasy that reinforces the

mathematical concept under study. Such topics as measurement approximations, fractions, mental computation, bar graphs, and equivalent fractions are featured.

The program "Problem Solving: Many Ways to Go" opens with an analysis of the logistics problems encountered by 2 young girls in the dog walking business. As they seek the best routes through charting the various alternatives the possibility is advanced that there may not be one best route. Each of the girls deduces her best alternative based on different but correct computation.

"Give & Take"

This series was produced in 1982 for grades 10 to 12 by the Educational Film Center of North Springfield, Virginia, in association with the Alberta Educational Communications Corporation (ACCESS), Calgary, and The Film Works in association with TVOntario, Toronto, for the state and provincial education agency consortium organized and managed by the Agency for Instructional Television, the Joint Council on Economic Education, and the Canadian Foundation for Economic Education. Additional financial assistance was provided by the Office of Consumer Education of the U.S. Department of Education and 24 U.S. corporations and foundations.

The series endeavors to help students improve their decision-making skills as producers, consumers, and citizens through an understanding of economic concepts. The goals and values individuals and societies must consider when allocating scarce resources are analyzed. Students are observed systematically defining problems and analyzing alternative solutions for such topics as social decision making and scarcity, opportunity cost, derived demand, and market structure.

In the program "A Key to Productivity: Human Capital" 2 new workers learning their jobs illustrate economic principles. They are observed encountering various employments while making separate career choices. One worker bases his decisions on financial reward while the other chooses career advancement through college and trade seminars.

Bilingual

"Carrascolendas"

For Mexican-American children in central and southern Texas age 3 to 9, this series starting in 1970 continued in production for several years. KLRN, Austin, Texas, developed the series with funding from ESEA Title VII on Bilingual Education and the Emergency School Aid Act. Each segment is partially in English and partially in Spanish.

The series takes place in the mythical town of Carrascolendas consisting of a 100-square foot set with a dozen buildings with fully finished interiors surrounding a 50-foot square plaza. Each show is a complete story with an average of 6 original scored and choreographed musical numbers per show. Characters include Agapito Gomez, the world's only bilingual lion; Mabel the hip, black musician; and an assortment of Anglo and Latino humorous characters (Berkman, 1974).

Originally intended for the classroom the series became popular enough to be broadcast to children at home. As attested by coverage of such topics as emotional states, attitudes toward one's self, relationships, and attitudes towards others and the external world, Carrascolendas concentrates on mental health and good social adjustment. (Mielke, 1975).

"Villa Alegre"

This award winning series was produced in 1972 for Spanish-speaking children ages 4 to 8 by Bilingual Children's Television, Inc. of Oakland, California, in conjunction with the Berkeley Unified School District under funding from ESEA Title VII--Bilingual Education, the Emergency School Aid Act, the Ford Foundation, and the Exxon U.S.A. Foundation.

Bilingual with a Latin American format, the series blends live video segments with film and animation of stories, games, dances, and songs. The goals of "Villa Alegre" are (1) to promote cultural pluralism through an understanding and appreciation of Latin American culture, heritage, values, and mores; (2) to provide the Hispanic child with an experience in which his or her home language and culture predominate for the purpose of enhancing his or her self-image and bridging the linguistic and cultural gaps that may exist between home and school; (3) to help non-Spanish speaking viewers recognize the advantages of speaking more than one language; (4) to aid the viewer in developing the communication and problem-solving skills necessary to function successfully in his environment; and (5) to present selected information designed to lead to the development of concepts in the areas of human relations, nutrition and food, natural environment, energy, and man-made objects (Mielke, 1975).

"ThinkAbout"

"ThinkAbout" was phase 1 of the Skills Essential to Learning project mentioned in Chapter V and consists of 60 programs organized into 13 skill clusters. This series is one of the most comprehensive ITV programming ventures ever undertaken. It is somewhat unique among

ITV offerings in that it seeks to teach children those skills essential to learning by using the most advanced ITV programming techniques.

"ThinkAbout" was developed in 1979 for grades 5 and 6 by The Alberta Educational Communications Corporation (ACCESS); Educational Film Center, North Springfield, Virginia; KERA, Dallas; KETC, St. Louis; KOCE, Huntington Beach, California; South Carolina ETV Network/South Carolina Department of Education; TVOntario, Toronto; and the Utah State Board of Education for the consortium of state and provincial education agencies organized and managed by the Agency for Instructional Television. Additional financial assistance was provided by the Corporation for Public Broadcasting and Exxon Corporation.

Among the several awards won by this series are the ACT Achievement in Children's Television Award for 1980; two CINE Golden Eagle Awards, 1980; a Bronze Award at the International Film & TV Festival, New York; a Certificate of Creative Excellence at the U.S. Industrial Film Festival Association, 1980; and a Red Ribbon at the American Film Festival, 1981.

The series seeks to strengthen reasoning skills especially in language arts and mathematics. The designers describe the independent learner as one who can (1) communicate effectively, (2) assume responsibility

for learning, (3) reason systematically, and (4) think confidently and flexibly. Each program applies one group of basic skills to reasoning or problem-solving tasks frequently required of children. The series illustrates good thinking strategies.

The programs are grouped into 13 thinking skills:

(1) finding alternatives, (2) estimating and approximating, (3) giving and getting meaning, (4) collecting information, (5) classifying, (6) finding patterns, (7) generalizing, (8) using criteria, (9) reshaping information, (10) judging information, (11) communicating effectively, (12) sequencing and scheduling, and (13) solving problems. There are two specialized sequences called "tips" and "challenges" which aid viewers in solving problems and in independent thinking.

The program "Make a Deal with Yourself" is a tip designed to sharpen skills in judging information. Two boys who are best friends have problems with their careers. One of the boys falters from a lack of practice in his audition for a country band while the other is late for his first day on a new job. Desiring more personal discipline they set schedules, plan, organize, and provide themselves little rewards for their diligence.

Also dealing with judging information, "Point of View" stresses the understanding of another person's point of view. In a discussion about a new park one boy says he likes it but another boy complains that his house had been torn down to make room for the park putting his family in public housing. To understand his companion's hurt the first boy walks about town talking to city planners, citizens, and displaced residents.

Summary

In the early-1970s ITV programming changed considerably. From its earlier era characterized by meager cost and poor quality productions, ITV evolved into a medium with high budgets and expertly designed programming reflective of greater knowledge of mass audience appeal rather than continuing to focus exclusively on academic matters. The programs were often being designed as a subject overview to help the teacher introduce a new phase of the curriculum. ITV also began to cover subject areas not traditionally part of the school curriculum such as environmental issues, learning processes, or interpersonal social and emotional issues.

In contrast to early ITV programming, which usually presented basic subject matter, more recent programming utilizes production on location with special effects, music, comedy, and professional actors in entertaining

stories. Most such programs get their message across through social change or entertaining sequences such as humorous sketches, song, dance, and extensive special effects. This works well even for involved emotional and social issues.

Apparently a most effective technique is to convey the instruction in life-like situations which easily reveal the practical need for the learning. Typical of this approach would be to teach mathematics at the grocery store. Programmers seem to believe that repetition enhances the learning of material by very young children. To prevent boredom humorous sequences are interjected between the learning sequences.

CHAPTER X

CASE STUDIES: ADVANCED ITV SYSTEMS 1972 TO PRESENT

Instructional television distribution technologies advanced rapidly during the 1970s and 1980s. Relying on satellites, the new technologies delivered ITV programs across the entire continent. Computer interactive laser videodiscs allowed ITV programming to interact closely with students so as to produce a customized learning environment.

Certain technologies would further amplify ITV capabilities. For example, cable television, though underutilized by ITV, could offer such communication advantages as two-way communications and the capability to extend the ETV broadcast by hundreds of miles. The saga of cable TV also reveals the political vectors affecting the Federal Communications Commission, the agent which decades earlier had given ITV its start.

Cable Television

The Federal Communications Commission on February 2, 1972, issued its Cable Television Report and Order (Cable television report and order, 1972) citing the benefits, including educational, of cable television. In keeping with the public interest standard set forth in

the Communications Act of 1934 the FCC allocated cable channel access for education.

Signal Carriage

Part II of the Cable Television Report and Order, "Television Broadcast Signal Carriage Rules," covers the importation of signals from educational stations. The FCC permitted the carriage of distant ETV station broadcasts in the absence of local objection.

The principal concern of noncommercial educational broadcasters with signal importation is not reduction in audience size but possible erosion of local support among cable television subscribers. The rule we are adopting will permit carriage of distant educational stations in the absence of objection from local educational stations or educational television authorities. (Cable television report and order, 1972, p. 180)

Aware of the financial problems of education the FCC in its cable television ruling offered informal proceedings should objection to local signal carriage arise. This section of the FCC report read

Educational television interests are concerned about such a rule only to the extent that it might involve them in difficult and expensive process. We recognize the difficulties that educational interests face if forced to spend time and money in protracted litigation before the commission and will accordingly attempt to settle any questions that may arise through informal procedures. We will give their objections careful consideration, and will endeavor to work out accommodations that serve the public interest. (Cable television report and order, 1972, p. 180)

However in further statements the FCC included a preference for the commercial value of cable television in reaching the widest possible audience.

In the absence of objection, however, the widest possible dissemination of educational and public television programming is clearly of public benefit and should not be restricted. While all objections will be carefully considered, we do not ordinarily anticipate precluding carriage of state operated educational stations in the same state as the cable community. (Cable television report and order, 1972, p. 180)

Access and Production

Considering cable TV to be still in its developmental phase, the FCC in the early-1970s encouraged innovation. In Part III of its Cable Television Report and Order subtitled "Access to and Use of Nonbroadcast Channels," the FCC designated some channels for education without charge for 5 years. After the designated period with its funding problems ETV was further encouraged by the lower television signal standards permitted on cable over other forms of TV. In this statement on the educational access channel the FCC noted:

It is our intention that local educational authorities have access to one designated channel for instructional programming and other educational purposes. Use of the educational channel will be without charge from the time subscriber service is inaugurated until five years after the completion of the cable system's trunk line. After this developmental period--designed to

encourage innovation in the educational uses of television--we will be in a more informed position to determine in consultation with state and local authorities whether to expand or curtail the free use of channels for such purposes or to continue the developmental period. The potential uses of the educational channel are varied. An important benefit promises to be greater community involvement in school affairs. (Cable television report and order, 1972, p. 191)

The FCC also cited the benefits to education of linking the personal computer with two-way cable or interactive video. Its remarks on this topic were as follows:

It is apparent, for instance, that combined with two-way capability, the quality of instructional programming can be greatly enhanced. Similarly, some envision significant advances in the educational field by the linking of computers to cable systems with two-way capability. For the present, we are only requiring that systems provide an educational channel and, as noted below, some return communication capability, and will allow experiments in this field to proceed apace. (Cable television report and order, 1972, p. 191)

Satellite ITV Pilot Projects

With a signal able to cover most of North America satellites have improved ITV distribution. Moreover, satellite transmission time costs have fallen from thousands of dollars an hour to less than \$400 an hour. These costs are still falling. The use of this broadcast opportunity however depends on renewed enthusiasm for ITV.

The potential for satellite broadcasting was demonstrated by the National Aeronautics and Space Administration (NASA) when in 1974 and 1975 they used a powerful satellite to broadcast education and educational service programming to rural areas. Though more of a demonstration of the technology than of the educational potential of satellites, the effort proved that ITV could be made available to most of the world (Cowlan & Foote, 1975).

The powerful satellite used had the capabilities of broadcasting to small, low-cost ground receivers a video image and 4 simultaneous audio channels allowing viewers to choose among 4 different programs. There were 3 different categories of remote stations: (1) the receive-only terminal which received color video signals and associated audio channels but did not transmit, (2) the intensive terminal which had the same receiving capacity and could transmit audio, and (3) the comprehensive terminal which both received and transmitted audio and video signals (Cowlan & Foote, 1975).

Rocky Mountain Educational Project

This ITV project involved a total of 68 satellite receiving stations, 56 of which were in rural schools in remote regions of 8 Rocky Mountain states. Each state had 3 stations with two-way audio capabilities. For one

semester ITV broadcasts were for 30 minutes, followed by 6 minutes of students at two-way terminals questioning the television teacher. Teachers were given guide books and students were given evaluation forms to judge the programming.

The ITV satellite broadcast "Time Out," for example, conveyed career education to students in grades 7 through 9. For the interactive phase the classroom teachers would select a student to ask a question over the satellite followed immediately by classroom discussion of the program's topic. The school week concluded with a review of the previous 4 programs (Cowlan & Foote, 1975).

This project demonstrated that by satellite ITV could reach children in remote regions of the United States.

Alaska Education Project

Run by the Governor's Office of Telecommunication, the Alaska satellite ITV project involved 17 villages with equipment capable of receiving video and receiving and sending audio. Designed by parents, native leaders, teachers, and administrators the instruction was aimed at primary children and new teachers. Tape-recorded programming from Fairbanks was followed by a live

interaction portion from Juneau using a different teacher.

In one segment a teacher taught English to a robot and 2 space puppets while prompting students watching in class to vocalize responses. A set of simple materials for use in the drill exercises was provided. The teachers at the remote schools had drill exercises and lesson guides. The format was a 20-minute lesson followed by 10 minutes of interactive discussion (Cowlan & Foote, 1975).

Appalachian Education Satellite Project

The Appalachian satellite ITV project was administered by the Appalachian Regional Commission and coordinated through existing Regional Education Service Agencies for the Appalachian states. The telecasts were to 15 sites clustered in 5 equal groups. Only 1 site in each cluster could transmit with the other 2 sites interacting with the transmitting site through spoken word and teletype. The transmitting site then relayed messages to the television instructor.

Each lesson was followed by a 15-minute review in which participants were equipped with a 4-button response pad that selected the audio channel heard over their headphones. All channels carried the same review material preparatory to multiple choice text. The

students heard identical material until they pushed the button corresponding to their answer choice at which time they heard a description of the factors of the correct choice and then the text resumed (Cowlan & Foote, 1975).

This project was significant in using the 4-channel audio mechanism to reach students of various academic levels. In addition, this mechanism proved to be a means for individualizing instruction.

Satellite ITV Distribution Networks

The early experiments in satellite communications led to national ETV distribution by this process. This effort placed ITV in the forefront nationally for television distribution technologies.

Public Broadcasting Service

As previously noted, PBS manages network interconnection services and program distribution for approximately 300 affiliated PTV/ETV stations. As a distributor for PBS the National Program Service utilizes a multiple channel satellite system. Members are allowed to choose their programs for rebroadcast from such offerings as drama, science and public affairs programming, children's entertainment, and educational and informational programs.

Without program-producing capacity PBS arranges for program acquisition from PTV/ETV/ITV stations and independent producers while managing the technical aspects of station interconnection and working on experimental projects with different government agencies (CPB, 1983).

PBS's elementary and secondary instructional service provides programs and series, curricular materials, study guides, and utilization services to ITV members. As a result of this approximately 90% of all public television stations provide ITV services and of these approximately 80% offer K-12 ITV, primarily "Sesame Street," "The Electric Company," and "3-2-1 Contact" (CPB, 1983).

National Narrowcast Service

PBS is presently part of the National Narrowcast Service (NNS) which seeks to link the existing public television domestic satellite interconnection system to Instructional Television Fixed Service (ITFS) stations across the country (PBS National, 1983). By 1985 the Public Broadcasting Service had licensees for the NNS in more than 80 cities (Behrens, 1984).

The NNS is a national distributor for instructional, educational, professional, cultural, and informational television programming based on social and

educational value rather than mass audience appeal. While much of the programming pertains to post-secondary and professional training, elementary and secondary education benefits through an increased transmission of course material to the schools and from the schools' ability, through NNS, to reach programming available through museums and libraries. Even public television not holding license to the ITFS can be linked to an educational institution that has ITFS affiliation and NNS programming.

Multi-State Network Satellite Screening

As previously mentioned, the multi-state ITV networks (SECA, CEN, PMN) cooperate in broadcasting ITV programming by satellite to ETV stations across the country which then relay the programs to the schools. The programming to be broadcast in the next year is previewed for ITV station representatives and ITV school coordinators responsible for local programming. This screening process is called "Sat Screen" and the initial offering is called "Firstview."

Priority is given to those ITV programs which meet Group 1 guidelines; which have 2 or more related programs of the same length in the same subject area at the same grade level under one title with a study guide; have not been previously presented at more than one

regional screening or at the previous year's preview showing; and include broadcast, cablecast, tape duplication and distribution, and record rights for local preview. In Group 2 are new series which do not meet Group 1 guidelines, older series with current educational value, experimental projects, single programs, or computer courses to accompany a video presentation (Firstview, 1984-85).

The program distribution guidelines for the satellite screening are strictly enforced. In addition to the mentioned distribution rights, programs must have a group rate pricing schedule, a statement on extended broadcast rights for the entire school year, and be on 3/4 inch videocassettes (SECA, 1983; Firstview, 1984-85). Some of the major distributors active in this process are the Public Broadcasting Service; Agency for Instructional Television; Great Plains National Instructional Television Library; Southern Educational Communications Association; Central Education Network; Pacific Mountain Network; TVOntario; Encyclopedia Britannica; Films Incorporated; WVIZ, Cleveland; and numerous other ETV stations, educational associations, and independent producers across the country and throughout the world.

The Agency for Instructional Television's pricing guidelines have become the industry standard. Their rental fees are based on the premise that there should be

a relationship between the amount paid and the number of students receiving the programs. The 2 parts of the fee are a right to use fee and a delivery of service fee. The right to use fee authorizes classroom viewing for an academic year for those programs obtained through satellite transmission or from the multi-state ITV networks. The fee is determined by the length of the program as well as the realized school population times the number of programs in the series resulting in such rates as \$32.50 for a 10-minute program or \$42.50 for a 30-minute program. The school population cost is \$2.00 for between 10,000 and 350,000 students and then \$.80 for each additional 10,000 students (AIT, 1984).

Computer Interactive ITV Pilot Projects

While ITV has gone from local distribution in the early days to mass distribution by satellite, ITV has also evolved from broadcasts to large audiences to ITV for use in small groups.

Nebraska Videodisc Design/Production Group

Under a 1978 grant from the Corporation for Public Broadcasting KUON-TV, University of Nebraska Television, conducted a multiple-year investigation into the potentials of videodisc technology for instructional and public television. Also involved in this effort were

DiscoVision Associates of Los Angeles, a leading developer of videodisc equipment; the Great Plains National Instructional Television Library; and the University of Mid-America, Lincoln, Nebraska. Under University of Nebraska Television the group participants became the Videodisc Design/Production Group (Nebraska, 1979).

The Videodisc Group developed their programming material to take advantage of both the storage capacities of videodiscs and for their capability to link with the branching and record keeping functions of personal computers.

"Going Metrics." In this videodisc the learner views an opening title sequence after which the disc automatically stops on the first of a series of subject orientation frames. An instructional note at the bottom portion of the frame informs the learner that he or she is viewing a still frame which he or she can move from by pushing the "still forward" key. The learner is to then press "play," bringing on the instructional material followed by a decision frame, giving the learner a choice of either going to the next frame by pressing "play," or going to the practice problems by pressing "still forward" (Daynes & Nugent, 1980).

"Basic Tumbling Skills." This videodisc has the student respond to an introductory sequence of

instructional components before answering questions based on viewed information. It demonstrates the potential of videodiscs for group instruction at an elementary level.

Each instructional segment is divided into chapters with each chapter containing a "lead up," "walk through," and "demonstration" of the skill section. The viewer finds the desired chapter by pressing a numeric digit on the handheld keyboard which begins the instruction. By pressing the appropriate key the viewer may stop the instruction, speed it up, slow it down, or reverse it.

Each chapter ends with an "auto stop" frame that refers the viewer to the availability and location of teacher's aids both on the disc and in the user's manual, and the chapter locations for the remaining programs. The viewer can then press "step forward" to continue on to the next chapter or press a numeric key to view another chapter (Daynes & Nugent, 1980).

"Mejore su Pronunciacion." This series is designed for individualized, self-paced instruction at the secondary level.

The viewer sees a table of contents providing such options as an introduction, chapters on Spanish pronunciation problems, or an appendix and glossary. By pressing a single digit on the handheld keyboard the viewer obtains the desired phase of the program.

Each chapter contains a dramatic vignette and explanation, practice exercises, and a self-test. At the end of each segment the viewer can repeat the segment, continue on to the next segment, or continue to another chapter. The tests require the viewer to tape a series of words on his or her own cassette and then send the tape to the teacher for grading.

"Principles of Operant Conditioning." This disc was designed so that the student receives relevant questions and the student responds in a correct manner. The learner, however, modifies the presentations to fit his or her learning pace. The increased interactive capabilities of the disc are accomplished by transferring control of the videodisc to an external microcomputer.

The disc consists of an introduction, 5 chapters, and an appendix. The introduction is a general overview of the unit. Each of the chapters begins with a learning objective, is followed by a general statement or rule, and ends with practice problems. The computer evaluates the student's performance and then suggests such instructional alternatives as go on to the next chapter, write a short paragraph and enter it into the computer, review specific sequences in the chapter, view another example with additional problems, or terminate the program. A final test is then graded by the computer and

stored on magnetic diskette to be reviewed by the course instructor (Daynes & Nugent, 1980).

"The Voyage of the Mimi"

This series was produced in 1985-86 for mathematics and science classes grades 4 to 8 by Bank Street College of Education under funding from Holt, Rinehart and Winston, Publishers and the U.S. Department of Education. The program includes textbook coverage with video programs, computer discs, and study guides. It represents the first cooperative efforts by private industry and the federal government to develop a multi-media curriculum for use in the schools.

The instructional exercise is young scientists encountering scientific and mathematical problems. Experiments to be conducted in search of the needed information are provided in workbooks and in computer tapes or discs. To adopt the complete system of 13 half-hour programs a school needs a videocassette recorder, a television, and a computer.

The episodes are a continuing saga of young scientists aboard "Mimi" studying humpback whales. Expeditions are documentaries that emphasize the science and math topics introduced in the episodes. The student guide with each series is a synopsis of each television episode, relevant science and math information, and

relevant activities and exercises. The teacher's guide contains strategies for coordinating the student guide, the study books, the computer material, and the TV episodes with the instructional strategies.

The 4 learning modules included with the series are designed to stimulate the development of problem-solving skills while students acquire a practical understanding of science and mathematics concepts. Each module consists of computer material, a teacher's guide with computer and non-computer activities, and 25 student workbooks (Holt, n.d.).

Summary

Communications technologies advanced rapidly during the 1970s and early-1980s. Cable television and satellites extended the coverage area of any form of television including ITV. The multi-state networks and the Public Broadcasting Service utilized satellites as their main distribution mechanism for the delivery of ITV programming to the stations.

A trend toward the merging of video and computer technologies began in the early-1980s and the term instructional television began to be replaced by the term "instructional telecommunications." Videodisc machines advanced the capabilities of television to convey instruction and computers to interact with the learner.

CHAPTER XI THE STAGNATION OF ITV

While the 1980s were an era of rapid advancement in instructional telecommunications, financial support for ITV dwindled and classroom use of ITV stagnated. School personnel had rejected ITV.

Limited Classroom Acceptance

There were several reasons for the reluctance of teachers to become involved with ITV. While early scheduling problems were resolved by the videocassette recorder, the limited number of television receivers had to be scheduled and then shuttled between classrooms. Instructional television almost never became part of a school's curriculum. Initially administrators forced ITV on the teacher and finally retracted, amidst protest, to offering it as a possible supplement. The somewhat differing curriculums among schools caused problems with developing acceptable programs. Low budgets ensured that programming would never fulfill its original potential of bringing superb instruction and intricate laboratory experiments to the widest possible school audience.

Financial Support Withdrawn

With proper leadership commitment ITV may have become a low-cost form of excellent instruction but diminishing funds indicate that ITV has not realized this goal. The main reasons for this discouraged state of ITV affairs is teacher rejection and a tightening economy.

State and Federal Government Rationale

By the mid-1980s the financial cutbacks of the Omnibus Act were being felt. The resulting tightening of school budgets meant less support for ITV usually considered to be a nonessential part of the school program. The "back-to-the-basics" movement was in effect and the commercialized ITV programming style of the prior decade had not established the medium as delivering the basics.

Moreover, public attention in the 1980s was turning to computers, the latest educational technology, so the politicians, following the public whims, spent on computer technology rather than ITV (School Utilization, 1982-83).

U.S. Department of Education Rationale

In planning to withdraw their ITV funding in 1987 the U.S. Department of Education cited lack of congressional interest, public interest, and PTV

interest. Their 56 series, though free to qualified organizations, have few takers.

Indeed, escalating TV production costs and public concerns against federal involvement in broadcast programming meant the U.S. Department of Education would have to allocate \$5 or \$6 million to ITV programming over which it would have little control. Thus, the Department ended its ITV funding in 1986 with \$1 million for "The Voyage of the Mimi" and the Childrens Television Workshop (M. Davis, personal communication, 1986).

Public School Rationale

In response to severe budget cuts from the Omnibus Act, the proliferation of videocassette recorders easing ITV schedules, and relationships that were often still strained from program scheduling problems public schools began severing their associations with PTV. According to Dr. Maynard Orm, General Manager of public station KTEH in San Jose, California, even those PTV stations with a commitment to education were becoming totally dependent on private funding (personal communication, 1985).

PTV Station/CPB Rationale

Because of funding reductions brought on by the government's effort to eliminate federal financial involvement in social services and by the federal

cutbacks influenced by the budget deficit, the CPB has been unable to maintain or increase its level of support for ITV (Potential, 1984).

The Commercial Interests

A less profitable economy in the 1980s caused commercial interests to curtail funding of ITV. According to Richard R. Rector, Chairman of the National Academy of Television Arts and Sciences, oil companies, the primary private funders of ITV, reduced their financial involvement with the medium after a world oil glut reduced profits (personal communication, 1986).

Instead of taking advantage of the wide audience appeal of current ITV, commercial interests have chosen to compete for the young audiences with entertainment programming. Moreover, the FCC no longer enforces the regulation that commercial stations carry some ITV for children. Such competition forces PBS further toward programming of a less educational and a more popular nature. What ITV remained was often scheduled at the less popular viewing hours. Neither a network or station owner, the Public Broadcasting Service can do little to increase ITV programming or to schedule ITV at optimal viewing times (M. Davis, personal communication, 1986).

Renewed Congressional Interest

The 1980s are beginning to show some parallels with the 1950s, the era of ITV's establishment. In the 1950s, when the challenger was the Soviet Union with its Sputnik launch, the United States felt a loss of its technological lead. Now in the 1980s the challenge is Japan with its successful business practices. Again the United States feels itself falling behind a world challenger. Moreover, both eras had population booms straining an underfunded school system desperately in need of more math and science teachers. So, once again the proponents of ITV are being called to testify before congressional committees.

On October 5, 1983, for example, ITV spokespersons appeared with other educators before a House joint committee on telecommunications and education. Included in this unique committee were representatives from the House committees on energy, commerce, telecommunications, consumer protection, finance, education, and labor. The House Subcommittee on Elementary, Secondary, and Vocational Education had called the meeting to discuss the potential of ITV.

Among those testifying for ITV before the joint committees were John D. Abel of the National Association of Broadcasters, Grace Baisinger of the National Parent Teachers Association, William F. Baker of Westinghouse

Broadcasting and Cable, Edwin Cohen of the Agency for Instructional Television, Gerald Lesser of Harvard University School of Education, Lloyd N. Morrisett of the John and Mary R. Markle Foundation and the Children's Television Workshop, Edward J. Pfister of the Corporation for Public Broadcasting, Sharon Robinson of the National Education Association, Eli A. Rubinstein of the University of North Carolina, and William S. Singer of Prime Time School Television (Potential, 1984).

In calling together the joint committee Representative Timothy Wirth, chairman of the Subcommittee on Telecommunication, Consumer Protection, and Finance referred to the potential of ITV for helping to resolve the nation's educational problems. He asserted:

Over the past several months a series of blue ribbon commissions have pointed to the educational crises facing our country. They have suggested that we are losing ground in competing with the rest of the world in an increasingly technological age. Notably, a recent report by a National Science Board commission calls broadcasting "the most pervasive medium of informal learning today" and outlines several suggestions to improve television's positive educational impact on children. (Potential, 1984, p. 2)

Wirth praised "Sesame Street" for increasing the verbal ability, intelligence, coordination, and attitude toward school of its young audience and called for a "Children's Television Education Act" which would require commercial

broadcasters to air 1 hour per day of educational programming for children (Potential, 1984).

In her remarks Sharon Robinson of the National Education Association noted the tremendous potential of television for educating:

With preschool and elementary school children watching up to 25-30 hours of television a week, it is in our view imperative that this medium be judged as part of the educational process--for better or worse. (Potential, 1984, p. 9)

Edwin Cohen, Executive Director of the Agency for Instructional Television and Chairman of the Board of the Joint Council on Educational Telecommunications, in his testimony commented on the potential of ITV for math and science education:

We are now looking at, as has been repeatedly pointed out, a concern for improving and changing what we do in sciences education, what we do in mathematics education, what we do in foreign language education. These are, without debating the point, matters of national concern and have been given national priority. It would seem that here, too, television has an opportunity of assisting, of accelerating the way that these areas can be strengthened. (Potential, 1984, p. 80)

Cohen called for more ITV programming and teacher training in the use of the ITV medium.

CPB's president Edward Pfister noted that for 2 years this organization's highest priority has been children's programming. He wanted more ITV funds for productions like "3-2-1 Contact" and "Reading Rainbow", for mathematics programming, for the intra-state

consortium activities of the Agency for Instructional Television and the multi-state networks, and for continued research in the ITV potential of videotext, videodisc, computers, and cable television. Pointing out that had funding not been so severely cut in 1982 the CPB would have taken ITV well toward these goals, he asked for \$30 million computed at the rate of \$1 per child per year (Potential, 1984, p. 82).

John D. Abel, Senior Vice President for Research and Planning of the National Association of Broadcasters, however, called for restraint so that the mistakes generated by over-reaction to the Sputnik challenge of a quarter century ago would not be repeated. He wanted the federal government to put ITV in the nation's classrooms:

This reemphasis on science reminds me of the sputnik scare of 25 years ago. President Kennedy faced a similar national concern in the 1960s. The problem was successfully addressed, but the Government did not decide to become program director for the Nation's television stations. Instead, as a nation we focused on the educational system. It seems equally wise today that we not rely on a secondary source to be a teacher at home. An educational problem must be addressed through the educational system and not through the broadcasting system. (Potential, 1984, p. 42)

He further emphasized the need for ITV in the classroom because it is unrealistic to assume youngsters will voluntarily watch educational television programs, that parents will supervise program selection, and that, after

a full school day, youngsters will be eager and able to master the exact sciences by watching a television program. In his final argument in favor of involvement with school-based ITV was the expectation that commercial television would object to even one hour a day of children's programming (Potential, 1984).

Summary

For ITV the decade of the 1980s so far has represented a period of retrenchment brought on by the Omnibus Act's elimination of federal support. Facing under this Act a 25% federal funding cutback, the states could not take on ITV funding needs. The U.S. Department of Education cited not only budget constraints but a general lack of interest to continue financial involvement with ITV. For their part, school systems, already disillusioned by mishandling of ITV scheduling and relationships with teachers, accelerated their disassociation with ITV when facing recent budget constraints. All these trends affected the CPB involvement with ITV as well as its increasing interest in more popular programming techniques. Neither broadcasting corporations nor other corporations could discover any profitable use of ITV resulting in further reductions. The advent of the computer and its capture

of the public imagination has drawn further funds away from ITV.

Still, congressional interest in ITV was being revived by the emergence of conditions analogous to those prevalent in the 1950s, the decade of ITV's quickest advances. Again, the nation faces a burgeoning population, a teacher shortage, and a serious overseas challenge to our national supremacy. Once again Congress is beginning to look toward ITV as a possible solution to these problems.

CHAPTER XII CONCLUSIONS

This dissertation is designed to be a general history of ITV. Research findings are presented beginning with the ITV telecourse experiments of university laboratories in the 1930s; through the channel reservations given education on behalf of public need in the early-1950s; through the 1960s, an era of ITV's rapid growth spurred by legislation enacted in response to Soviet scientific challenges; through the civil rights movement which in the 1960s and 1970s affected ITV programming; through the Public Broadcasting Act of 1967; through the 1970s shift in programming from mainly educational broadcasting to public broadcasting; and finally through the Omnibus Act which eliminated federal funding for ITV.

Adoption Patterns

ITV evolved in a cyclical pattern. In 1952, after the Sixth Report and Order established frequencies for educational purposes, ITV began to gain popular momentum, peaking in the late-1960s with equipment funding through the NDEA and ETV Act and ITV program funding through the ESEA and its amendments. ITV started to stagnate after

the Public Broadcasting Act allowed those stations not designed for education to shift away from ITV toward cultural programming. While the Omnibus Act brought ITV to its lowest level of support, conditions in the 1980s similar to the 1950s are beginning to revive congressional interest.

The lessening of federal legislative involvement in the late-1960s to the early-1970s was offset somewhat by the heightening interest of the Corporation for Public Broadcasting and the U.S. Department of Education. These two organizations aided the ETV stations, station program cooperatives, multi-state networks, ITV libraries, independent producers, and the Public Broadcasting Service in ITV program production and distribution. In the 1980s CPB ITV program funding activities dwindled on account of the impact of the Omnibus Act and other federal and state budget cutting measures. Though budget cuts were involved, the U.S. Office of Education in reducing its funding of ITV, also cited escalating program costs and indifference by ETV stations to the ITV programs already available at minimum charge.

Overall, ITV equipment development begun with the NDEA in 1958 which placed TVs in many classrooms, intensified after the ETV Facilities Act funded ETV stations through the 1960s, and slowed when the ITV reserved frequencies were filled by the early-1970s.

Program development began intensifying when ESEA funded ITV programming designed for the disadvantaged in 1965, reached its highest point in the mid-1970s, and ended in the 1980s with the budget constraints imposed by the Omnibus Act.

Leadership

The public's accepting ITV as a series of experiments in the use of new technology resulted in most funding for ITV occurring during its initial phase. Unfortunately by the time more efficient equipment and more interesting programming techniques had emerged, public and congressional enthusiasm for ITV had waned for what had become just another expensive instruction technology. This type of public attitude is indicative that ITV has become a fad rather than a permanent instructional resource.

Hardware Developments

In the late-1970s ITV technology progressed rapidly. The videocassette player eliminated ITV scheduling problems and the satellite increased ITV transmission capabilities. The computer interactive videodisc allowed ITV to provide individualized instruction. As a result of these technical

breakthroughs, ITV is limited only by the human factors of policy, administration, and programming.

Software Utilization

In the decade of the 1980s ITV programming available to only one-third of the nation's teachers is being used at the rate of less than 60-minutes per child per week. Originally designed as a provider of cheap but excellent teacher-directed instruction and laboratory experiments for the nation's school children, ITV eventually came to resemble commercial television with its effort to hold viewer interest with entertaining programming techniques. While today's ITV programming has only limited application in the nation's classrooms, it is ideal for the after school and early evening family viewing hours.

Classroom Support

The main reason that ITV failed to live up to expectations is that ITV never became a basic component of classroom instruction. Generally, untrained in ITV instructional techniques, teachers did not have access to adequate numbers of television programs that met their instructional objectives. ITV implementors seldom applied their medium as an aid to the teacher in those

aspects of the school program more amenable to ITV from among more traditional teaching methods.

A Model Electronic Curriculum

While the Constitution deems education a state power, authority over telecommunications is given to the federal government. Perhaps this power would allow a national ITV curriculum as an effective way to deal with the nation's school problems. Only the federal government seems to potentially have the equipment, staff, and funding capabilities to ensure that ITV realizes its potential for helping the nation advance socially and technologically in keeping with its place as a world leader.

Such an electronic curriculum aid might utilize satellite broadcasting to each individual school. The satellite would provide 12 channels of ITV programming, 1 for each grade level K-12, broadcast throughout the school day with a different subject each hour per grade level. For scheduling flexibility programs of 10-15 minutes might be repeated several times each class hour. Programs might follow teacher inclinations toward subject matter instruction as opposed to programs of more entertainment and social value. The cost of equipping a school for ITV instruction would be less than the cost of 1 teacher.

At best, electronic instruction would form part of the regular school instruction program. Helpful in achieving this goal would be a weekly ITV guide available to every teacher and classroom equipment for ITV reception. Rather than requiring teacher usage, the best ITV strategy would be to develop such excellent and appropriate programming that teachers would want to use ITV. This excellent ITV programming could be demonstrated in model schools.

Coordination of ITV with computers by the use of interactive videodiscs would cause these two technologies to change from being competitors to cooperative technologies enhancing the chances for ITV acceptance. The videodisc would deliver instruction and the computer would handle testing. The system might be researched for its instructional value and for its ability to relieve teachers of the various time-consuming administrative chores associated with grading. ITV might gain teacher adherents by using the storage and retrieval capabilities of the videodisc to increase the quantity of instructional material presented and the branching and record keeping capacities of the computer to handle test administration. Teachers might then devote more time to class preparation and student counseling thereby increasing the overall quality of instruction and the professional standing of teachers.

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BIOGRAPHICAL SKETCH

Randy William Maule was born on July 20, 1954, in Anaheim, California. He graduated from Eastern High School in Lansing, Michigan, in 1972. His Bachelor of Arts in business administration from Michigan State University was awarded in 1978 and his Master of Arts in journalism and communications from the University of Florida in 1984.

Mr. Maule's experience includes work as a telecommunications analyst in New York City, extensive work in video and audio production in Los Angeles, and work in broadcast advertising sales, production, and management for a major media conglomerate. He has taught courses in television and telecommunications at San Jose State University and Central Michigan University.


His outside activities include the creation of corporate and industrial video programs, instructional science and mathematics programs for children, and artistic audio and video feature shorts. Mr. Maule's research interests include electronic image processing, computer simulation, and interactive satellite communications.

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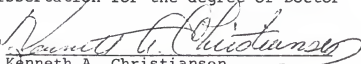
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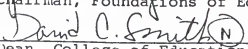


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This dissertation was submitted to the Graduate Faculty of the College of Education and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 1987



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